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A N  
E S S A Y  
ON THE  
B I T E  
OF A  
M A D D O G.

---

By DANIEL PETER LAYARD, M. D.  
Physician to Her Royal Highness the Princess Dowager of  
W A L E S, Member of the Royal College of Physicians  
in LONDON, and of the Royal Society.

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Conveniens homini est, hominem servare voluptas,  
Et melius nulla quæritur arte favor.

OVID. Epist.

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The S E C O N D EDITION.

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L O N D O N:

Printed for JOHN RIVINGTON, in St. Paul's Church-  
yard; and THOMAS PAYNE, at the Mews-gate.

M D C C L X I I I .

1763

E R R A T A.

Page 51, line 11. *for* distant ages, *read* distant places.  
p. 98. lines 12 and 18. *for* full moon, *read* new moon.

TO

Sir EDWARD WILMOT,  
BARONET, M. D.

Fellow of the Royal College of Physicians in LONDON, and of the Royal Society, First Physician to His Most Sacred MAJESTY, and Physician General to the Army.

SIR,

To reverence patrons while living, and to hold their memory in the highest veneration after this life, is the duty of every open hearted and grateful mind.

The publication of this Essay, affords me the favorable opportunity of expressing in the strongest manner, my gratitude for the unmerited favors I re-

A 2 received

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man  
2/1/1952

## iv DEDICATION.

ceived from that no less generous and humane MÆCENAS, than learned and successful physician Doctor MEAD.

Like many others, at my first setting out in practice, I found in him an encourager, who far from superciliously despising the inabilities and want of experience in youth, felt a pleasure in animating and inciting them to cultivate that emulation and zeal, which by their application they shewed for the study of whatever might prove useful.

The benevolent friend to mankind, in this as in other instances, strictly adhered to his MOTTO, and proved that he was formed

NON

# DEDICATION. v

NON SIBI, SED TOTI.

Accept SIR of this imperfect work, as a token of that respectful remembrance I shall ever retain for Doctor MEAD, and of my true regard for all his family.

That You, SIR, whom two succeeding monarchs have highly honored and deservedly distinguished, may continue to enjoy the royal confidence and the full possession of whatever you can desire, is the hearty and sincere wish of

SIR,

Your most obedient and  
most obliged humble Servant,

London March  
28, 1762.

DANIEL PETER LAYARD.

12. MARCH 1907

Wrote to Prof. T. S. Ferguson  
and Dr. W. H. Dall, and Prof. G. E. Muller  
about my observations on living  
fishes. Also wrote to Prof. C. L.  
Shaw about my observations on the  
fishes of the San Joaquin River.

On March 13, I had  
a very bad case of influenza.  
My temperature was 103° F.  
at noon and 104° at night.  
This condition continued until yesterday  
morning. In addition, I had a very  
severe cold. I am still not well.

Wrote to Prof. T. S. Ferguson  
about my observations on living

fishes. Also wrote to Prof. G. E. Muller  
about my observations on living  
fishes.

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THE  
P R E F A C E.

WHENEVER a calamity of any kind befalls society, it is natural for every individual to join in the alarm, and to enquire into the means of lessening, or avoiding the danger.

The subject of the following essay, although examined and treated of, by many authors of the most respectable character, is of too near and general concern for mankind to remain satisfied with the doubtful and apprehensive state in which they were left, through the uncertain effects of the cures hitherto directed. Many remedies have proved successful, which in other constitutions or climates failed. And the

only method to be depended upon seemed of too recent a date, for the universal adoption of that practice, without a confirmation of it's utility by repeated facts. It therefore behoved every one, whose profession was the healing art, to examine into the particular nature of this disease, the reasons why it had been so long undetermined in it's qualities and cure, and to remove such prejudices as were the strongest obstacles to such a desirable end.

Notwithstanding the highest veneration and most sincere respect was paid to Doctor MEAD's essay on this subject, yet the later improvements of others, deserved also their due consideration; and some successful cures incited me, not only to examine into the manner of their being performed, but also upon a clear conviction of the method being advantageous, I have ventured to state the facts and illustrate the discoveries of others, by bringing the account

count of this so terrifying disease to the test of reason; for as CELSUS observes in his preface, the practice of medicine ought to be rational.

This essay in the introduction, endeavors to shew, that the small advances in the knowledge of this disease, and the uncertainty of it's cure are owing to common prejudices and vulgar errors, which have always proved of the greatest hinderance to the progress of every science, but particularly of the art and practice of medicine.—And also it points out the nature of this distemper incident to mankind, from the bite of a mad dog.

The first section treats of the bite of a mad dog, as the cause of the malady, examines into the properties of the *saliva* of those animals, and by what means it becomes hurtful and poisonous to other creatures. The progress of this poison is also traced, and it's various effects enquired into.

Doctor MEAD's system, that the nervous fluid is chiefly affected in this disease, has been called in question, and the nerves themselves have been fixed upon as the seat of this distemper, and all the symptoms accounted for by the spasmodic contractions of the nerves. I have industriously avoided all unprofitable controversies, which in the art of medicine, as in all other arts and sciences, tend more to divide than to reconcile and convince the disputants. It probably may be in this case, as in many others, that by yielding and making some allowances on each side, truth would be easier ascertained than by cavilling through motives of pride and obstinacy. The wise father of physic has told us\*, *That our art is extensive, and our life but short.* Why should we then waste in trifling and needless altercations the little time we have to run over the vast field of medicine?

\* HIPPOCRATIS Aphorism i.

Men of the greatest abilities and acknowledged understandings have acquiesced in the persuasion of a nervous fluid, and of it's being not only the agent of the soul, but also that it is liable to be destroyed or propagated. Those who deny it's existence, do not refuse to acknowledge that the nerves are composed of a prolongation of the *meninges*, containing a pulpos portion of the brain, or *cerebellum, medulla oblongata*, or *medulla spinalis* in them, but will not allow that the nerves are vascular, and therefore solve all their actions by the vibrations, oscillations, and spasmodic contractions of the nerves. Allowing these external effects, which BAGLIVI, and the later accurate experiments of professors HALLER and WHYTT, and of Doctor BROCKLESBY, plainly evince of the irritability of the nervous parts, why may not the opinions of those learned professors and Doctors, SYDENHAM, BAGLIVI, BORELLUS, BERHAAVE, MEAD, HOFFMANN, LIEUTAUD,

TAUD, WHYTT, and HUXHAM in favor of a nervous fluid, or animal spirits be adopted? And at the same time that we find in those authors the proof of a *stimulus* in the blood, which acts on the nervous fibres of the blood-vessels, why may not the existence of a *sentient* voluntary principle be allowed of, which directs our will and motions at the same time that the component particles of the blood, particularly the salts, stimulate the vessels to such a degree, as to preserve the circulation of the streams of life? If it be urged that no one ever discovered either the nervous fluid or the vessels the animal spirits pass through, may it not be answered? That the OMNIPOTENT CREATOR has framed those tubes according to their use, and notwithstanding they may be too fine for our discovery even with the best microscopes, yet it may not be contrary to common reason, that they may be so formed as to convey proper subtle, elaborated particles

ticles from our blood, which may serve as the different links of the chain which connects our intellectual and corporal faculties together ; the existence of which rational soul intimately connected with our body, no one will presume to deny, although the means whereby they are united are effectually hidden from our limited view. How strenuously soever both sides may seem to insist on their different opinions, it is very evident that their pursuit in practice, are the same ; both in food and medicine, time out of mind, such diet or physic has been given, which would promote the greatest separation of active particles to increase the spirits ; and even those who stimulate the nerves, to produce their contractions, administer, and apply the same remedies to augment the circulation and heat, which is constantly lessened by perspiration. Since whatever be the singular notions of each side, they both follow the same intentions, there

there can neither be satisfaction nor utility in taking part in the dispute, but every one is to be left to enjoy his own opinion.

The second section enquires into the *hydophobia*, and shews that this affrighting symptom is common to other diseases, although not so general or peculiar, as in this one, occasioned by the bite of a mad dog.

The third section examines the several methods of cure, whether rational or empirical. Among others, bathing in the sea, or in cold spring water, are feverbally treated of. I have freely given my opinion in relation to every external application, or internal medicine, used for the cure of this disease, and have endeavored particularly to shew that Doctor MEAD's powder, although far from being an infallible remedy, is neither useless, or void of merit. In the consideration of the different methods which are recommended, I have had constantly before me the

the example set to every physician by professor BOERHAAVE and Doctor MEAD. It is well known by many, and recorded by Doctor MATY, who was intimately acquainted with both, that those learned men were not always of the same opinion, and yet their emulation towards the improvement of their profession was so disinterested and void of jealousy, that they retained for each other the highest sense of esteem and friendship; never were displeased with each other when they differed in opinion, but mutually and reciprocally communicated their observations and designs, and were constantly presenting one another with tokens of their regard. This humane and benevolent turn of mind in them both, appears in Doctor MATY's characters of those two great men \*. And he instances, that

\* *Essai sur le caractere du Grand Medecin, ou eloge critique de Mr. BOERHAAVE.*

*Journal Britannique, tom. xiv. Ann. 1754,  
mois de Juillet & Aout article 1er. p. 229, 230.  
Eloge du Docteur RICHARD MEAD.*

the BRITISH physician looked upon professor BOERHAAVE's notions as chimerical; when he sought to cure the small pox without suppuration, by means of a specific medicine extracted from *antimony* and *mercury* †. And the LEYDEN professor was persuaded that the *ash colored ground liverwort* was by far, too highly extolled by Doctor MEAD for the cure of the *hydrophobia*. These opposite sentiments were candidly and amicably considered, and did not in the least decrease the high opinion and confidence they had for each other. In imitation of such venerable patterns, I have carefully expressed my thoughts as fully and clearly as I could, without giving offence, or lessening in the least that respectful tribute due to every person who exerts his abilities for the common good of mankind.—In this section the external and internal use of *mercury*, for

\* BOERHAAVE de materie medica, sect. 1392.  
p. 256.

the

the prevention and cure of this disease are particularly considered.

The fourth section contains cases and observations tending to illustrate and confirm by facts, the success of the method which was pursued. Although the number be but small, there being only seven, yet from these may be drawn sufficient confirmation of the variety of the distemper, according to the sex, constitution of the patient, and season of the year. The first two cases are plainly acute. The three following are doubtful. The sixth of the putrid kind. And the seventh slow. Of these I am under the highest obligations to Doctor HELE of SALISBURY, and to my very worthy friend CHARLES ALLIX, Esq; for their kind communications. And as in an enquiry of this nature, even few well attested facts serve greatly to ascertain the truth of an efficacious practice, so trials made by different persons, and such who are not of the profession, will corroborate a testimo-

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ny, and satisfy those who may have but an unfavorable opinion of medicine and physicians.

To every case I have subjoined my remarks, and I flatter myself, that the freedom I have taken will not be disagreeable to the authors of them, especially to Doctor NUGENT, whose ingenious Essay on the *hydropobia*, and remarkable case of ELIZABETH BRYANT, I could not pass over without paying it due regard.

It may be observed, that in my remarks upon the case of FRANCIS RAY, I have taken no notice of Doctor JAMES's fever powder given by Mr. ALLIX, and lest I should appear to be biased or prejudiced, I think it but fair to declare, that I am fully convinced Mr. ALLIX gave it to FRANCIS RAY with no other intention, than to quicken the operation of the sea water which he sent, and whose purgative quality he feared might be lessened considerably by being stale. Doctor JAMES seems in the

case of WILLIAM GoopACRE \*, to attribute the cure of that person in the *hydrophobia*, to have been owing to his powder; but it doth not appear that this man had been bitten by a mad dog, and most probably the symptoms of the *hydrophobia* in the small-pox, were no other than what are observed in acute fevers, especially of a putrid nature, where the nerves of the *œsophagus* are particularly affected. I do not pretend to know, nor will I allow myself the liberty of guessing at the contents of that fever powder, which I own I never saw. From the effects which I have seen, it is a medicine of a powerful nature; it may undoubtedly have been of service in the beginning of fevers, in dislodging the putrid *saburra* from the first passages where it lodged, and caused the flame, but this I can safely add, from my own observation, that the purging, vomiting, and profuse sweats which attend it's operation,

\* JAMES's Dissertation on fevers, p. 50.

cannot be safe in such a relaxed, low, and depressed state, wherein the *vis vitiæ* is almost exhausted. In the recital of so many cases to recommend the sale of this powder, it were to be wished that in justice to mankind those also had been inserted wherein it had failed, as so many cautions to avoid the improper administration of it. A physician who has the welfare of his patient and reputation at heart, can never direct a medicine whose composition and ingredients he is a stranger to, let his desire of relieving his patient in the speediest manner be ever so laudable and just. And on the other hand, such physicians are rather to be commended than blamed for their tenderness and humanity, when after declining to prescribe this powder, they have generously attended their patients, to watch and guard them against the violent effects of so active a medicine which they have taken of their own accord, or by the persuasion of their zealous friends.

After

After all, Doctor JAMES who has also inserted WILLIAM GOODACRE's case in his *treatise on canine madness*; p. 7, 8. "owns that he could not discover " the man had been bitten by a mad " animal to occasion the *hydrophobia*, " nor does he know in that case that " his powders would have cured him."

Lastly, in the conclusion, after enquiring into the cause of the general alarm, spread over the metropolis on account of mad dogs, some directions are given for the treatment of the disease, occasioned by the bite of a mad dog.

This is the substance of the Essay, now offered to the public, and which should have been publish'd some months ago, when it was drawn up, had not the advertising of Doctor JAMES's *treatise on the canine madness* retarded its appearance, but on perusing that work and finding nothing to prevent this publication, I venture to submit my thoughts on the same subject, to the examina-

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examination of every candid reader, whom I would first apprise, that I claim so little merit in this performance as truly to be able to say with the poet,

*Vix ea nostra voco.*

for I have only illustrated and attempted to reconcile the various opinions of others, and to fix upon the most rational method of cure from a full conviction, that such cure is in reality a practicable thing.

Let the reader then judge candidly of this performance, which if it prove the means of lessening the general and too strong rivetted apprehensions of the disease, and also contributes to the prevention or cure of it, I shall think I have not mis-spent my time, nor forfeited the good will and favor of my countrymen.

T H E

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I N T R O-

ЗАЩИТИО



## INTRODUCTION.

SIR THOMAS BROWNE †, in his enquiries into vulgar and common errors, among other causes of deception, places credulity, authority, and adherence to antiquity; and no doubt, as he observes, through the natural infirmity of human nature, through a supineness and readiness to believe whatever is transmitted, by a tradition seemingly authentic, and distinguished with authority, men are led implicitly to adopt the opinions of their forefathers, to propagate them with the same confidence as if they had been eye-witnesses of what they assert, and thus hand down to posterity the errors they early imbibed, and never gave themselves the trouble of inquiring into. But although mankind is not quite free from those prejudices, which are so many obstructions to the advancement of every art and science, yet daily experience testifies, that in an enlightened age popular notions are not so universally adhered

† SIR THOMAS BROWNE's Enquiries into received tenets, and presumed truths, book i. chap. iv, v, vi, vii.

B to,

## 2 INTRODUCTION.

to, unless they be established by repeated experiments, and matter of fact.

Indeed now-a-days, some men run into another extreme, and from a predominant principle of vanity, reject, as so many idle tales, or false conjectures, every thing, which doth not immediately strike them, not only withholding their assent, but even refusing to examine, into the truth of whatever is proposed to their consideration. Thus it is hard to say, which of the two, credulity, or scepticism, has proved the greater obstacle to the improvement of natural knowledge. It is plain, that both have ended in a strong spirit of enthusiasm, and that, in the art of medicine, as in other liberal arts, men through credulity, authority, adherence to antiquity, and also through scepticism, have been strangely misled. But the true Philosopher steers a middle course, and avoids both those extremes; he respects the authority of the ancients, without yielding his assent to what is either unnatural, or improbable; nor does he hastily condemn them, in favor of new discoveries, unless these are confirmed by repeated experience. On the other hand, he does not reject whatever is offered contrary to ancient authority, but candidly examines, what is proposed on both sides, and agrees to every new improvement, which bears the test of repeated examination.

Had not this been the rule which several great men have observed, the art of medicine

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would; at this time, have been as much a conjectural art, as in the time of CELSUS\*. It's certainty, indeed, can never be expected to be absolute, while there are, and must necessarily be, such a variety of constitutions, and of course such different degrees, as well as species, of the same distemper.

It is therefore the Physician's province, to discover the nature of the disease, the variety of its degrees, and appearance in different constitutions and climates, and to regulate his practice accordingly.

But to this great end, he must previously be acquainted with the construction of the human body, and the laws of the animal œconomy. It will not be sufficient alone to know the texture of the solids, without examining also the fluids. The knowledge of the circulation of the blood, which discovery will ever be the greatest honor to our countryman Doctor HARVEY, can avail but little, if the constituent parts of the blood are not examined, and, in the course of its circulation, the several secretions are not traced, the recrements and excrements observed, that by these inquiries the constitution and strength of every person may be determined.

Thus, by joining to what the ancients have remarked on these subjects, the improvements that have arisen from later experiments, the

\* CELSUS De Medicina, in præ'atione, p. 13—57.

## 4 INTRODUCTION.

great advantages proceeding from both will be happily united. The art of medicine will then appear, as Dr. BARKER says †, to have a settled rule of practice; and allowing for the difference of climate and constitution, the precepts of the *ancients*, and directions of the *moderns*, will be easily reconciled, according to their several notions of those diseases which repeated experience had made familiar.

Whenever any acute disease hath alarmed mankind, by its rapid progress, or baneful destruction, so as to have produced the greatest fears on its appearance, and despondency on its first effects, men have embraced, with the utmost eagerness, whatever method of relief has been offered, in the hope of receiving a speedy and instantaneous cure. This is remarkably the case with respect to that distemper, in particular, which is intended to be the subject of the following Essay.

There is not a more dreadful disease incident to human nature than that which we are liable to from the bite of a mad dog. The symptoms of it are terrible, the consequences are generally fatal, and the cure hitherto uncertain. The reflection on such an unhappy situation, which instantly occurs to a person bitten, disposes him to hearken, with implicit submission, to the opinion and advice of every one in whom he has the least confidence: the

† BARKER's Essay on the agreement between ancient and modern physicians, chap. i.

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the \* boasted remedies of the ancients, or empirical jumbles of later times, are applied in vain, the poison gains ground, and the patient, seeing himself disappointed, begins to doubt of the possibility of his being saved, and adds to the fury of the disease by his despondency and despair; till at last the aggravated symptoms relieve him from misery, by a welcome death, or which was the custom, not a century past, the unfortunate person was, contrary to all rules of humanity, deprived of life, by being smothered between two feather-beds †.

To prevent, therefore, all ill consequences arising from vulgar and common errors, the nature and effects of this poison, on the animal œconomy, the different methods of cure recommended in all times, and the few cures performed, are candidly to be examined, and mankind freed, if possible, from that most terrible reflection, that providence should have permitted the whole animal creation to be liable to so dreadful a disease, without pointing out, also, the means of cure.

That this distemper is not absolutely incurable, many instances plainly prove; and professor BOERHAAVE is of opinion, “ That “ from the examples already settled, and confirmed in the cases of other poisons, we

\* BOERHAAVII Aphorismi, 1139, 1141.

† MEAD's Essays on poisons, p. 176.

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“ ought not to despair of finding out the pro-  
“ per antidote for this also \*.”

In the course of this Essay I shall endeavor to prove, that this disease is of a complicated kind, having different appearances according to the age, strength, constitution, sex, and manner of life of the person bitten, temperature of the climate he inhabits, and the season of the year in which the accident happens; and also, that as circumstances of this sort are found to vary in particular cases, the method of treatment is to be varied likewise.

\* Nec desperandum tamen, ob exempla, jam in aliis venenis constantia, de inveniendo hujus singularis veneni antidoto singulari. BOERHAAVII Aphorismus, 1146. VAN SWIETEN Commentar. in BOERHAAVII Aphorismos, tom. iii. p. 579.

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## SECTION I.

### Of the Bite of a Mad Dog.

**B**EFORE I proceed to give an account of the symptoms occasioned by the bite of a mad dog, it may not be improper to observe,

First, That wounds made by the bite of a person, in the height of anger, of enraged animals, or wild beasts, are always attended with severe accidents: these are owing, as CELSUS declares \*, very properly, not to any particular poison in the animal, but to the violent laceration and compression of the muscles, nerves, tendons, vessels, ligaments, and bones; particularly in the bite of a large dog, of an horse, a wolf, a bear, or any such sized creature whose tusks and teeth either squeeze and bruise the parts they lay hold of, with so much force, as to make a deep wound, or tear away with exquisite pain, whenever their teeth have not entered so deeply. The symptoms arising from these bites, are, to the full, as violent as those which attend lacerated wounds

\* CELSUS, lib. v. cap. 27.

HEISTERI Chirurgia, part. i. lib. i. cap. xvi. p. 160.

occasioned by any blunt-pointed or rough instrument whatever; the loss of substance, and the parts affected, determining the violence of the symptoms, and the length of time requisite for obtaining a cure, according to the degree of suppuration, and constitution of the patient.

Secondly, Such is the fermentation raised in the blood, by the passion of anger, that the momentum of the circulation is greatly increased, and the secretion of the *saliva* forced out, in a larger quantity, by the frequent pulsation and compression of the blood-vessels. Such persons, or creatures, who are less liable to sweat, have generally a more copious discharge of urine; but in a violent fit of anger, the urinary secretion is suspended, and they throw out large quantities of *saliva*, which appears the more frothy, the more the person or animal is enraged, according to the velocity of the circulation of the blood, which is sometimes increased to such a degree, as to produce an high fever, attended with *delirium* and convulsions, and which, in some instances, brings on an apoplexy, and death.

Thirdly, That the *saliva* of a man, an horse, a monkey, and even of a dog, is not poisonous in a sound state, nor even when they are provoked to anger, common experience daily proves. The *saliva* is a thin, transparent humor, which, heated on the fire, doth not thicken, is free from taste or smell, froths

froths when strongly shaken, and is a glandular juice separated from pure arterial blood, and consisting of water, spirit, oil, and some salt\*. Now I shall only ask, Whether it is not universally admitted, that medicinally the *saliva*, both of man and animals, have been recommended externally as detergents, and dryers? Is it not known that many persons have found benefit from training up young dogs daily to lick foul ulcers, which no ointment could cleanse so well? And LORD BACON † has long since taken notice of it as a common observation, That dogs are almost the only beasts which delight in fetid odors; whence their readiness to lick their own, and other sores, may be accounted for: and there never was known a single instance in which the *saliva* of a young dog, although it has effectually acted as the most powerful detergent on ulcers, and has been received on those ulcers, when bleeding, hath produced the least signs of madness, or *hydropobia*,—merely because the dog was in a sound state.

No other symptoms, therefore, will arise after the bite of an angered person, or an enraged animal, such as an horse, a monkey, or a dog, than will appear from a lacerated and contused wound violently compressed and torn.

\* BOERHAVII Institutiones Medicæ, v. 66.

† BACON's Sylva Sylvarum, cent. ix. v. 835. Epistle on fetid and fragrant odors.

I come now to consider what may be the cause of madness in dogs and other animals, and to describe the symptoms which attend the bite of those animals when mad.

PALMARIUS\*, a disciple of FERNELIUS, who gives a circumstantial account of this madness, describes it to be a rage which seizes dogs at any time of the year, but chiefly during that part of the summer called the dog-days; that they communicate this madness by contact, both to man and beast. Whenever a dog, an animal easily provoked to anger, of a natural propensity to become furious, is kept from drink, either during the excessive heat of the summer, or the sharp cold in the winter †, his bile acquires such an extraordinary degree of acrimony, that he grows mad: but if these contrary dispositions of the atmosphere affect his blood and humours in such a manner that he become furious, it often also happens, that, through long fasting, being filled with salt meats or salt drink, or through want of drink after long and laborious exercise, a dog runs mad: and, particularly, if a dog has been bitten by one mad, or hath eaten of the flesh of any animal dead of madness, or of the plague, or of any putrid disease, killed by lightning, or by poison,

\* JULIUS PALMARIUS Constantius De morbis contagiosis.

† DIOSCORIDES De Theriaca, cap. i. Signa rabiosi canis, eorumque qui ab eo demorfi fuerunt.

or hath drank of stinking and corrupted waters, or eaten of high-seasoned acrid food, or hath worms;—in any one of these cases he is liable to go mad. Therefore in such countries where the change of air is sudden or extreme, sometimes violently hot, at other times intensely cold, this disease, in proportion, is more common ||.

An instance of the sudden effect of cold on a dog, I shall here relate. In the month of *February 1744*, on a clear frosty morning, a person of my acquaintance going from his house in *Dean-street*, near *Soho-Square*, to *Mary la bonne*, took out with him a small dog, of a spurious breed, partly spaniel, and partly harlequin, which had been kept within doors all the preceding part of the winter. The little creature was much delighted with his liberty, and running to and fro', when near *Cavendish-Square*, his master saw him reel, and stagger; upon which, he took the dog up into his arms, and was rubbing his legs, on the side he thought was benumbed with the cold, when, on a sudden, the dog was observed to froth considerably at the mouth, his eyes were red like fire; and immediately, from being a timorous and fond animal, he began to snap at his master, and attempted, several times, to bite him.—On

|| BOERHAAVII Aphorismus, 1134. VAN SWIETEN Comment, tom. iii. p. 539. MEAD's Essays on poisons, p. 137,

this,

this, convinced of the danger he was in, the gentleman threw him out of his arms, and the dog ran swiftly down the next street, where he was pursued into a meuse. He then endeavored to bite a large dog, which avoided him, and afterwards ran at some coach-horses which the farrier was shoeing; but upon his master's calling out to the man, the dog was prevented from doing any mischief, by a fortunate stroke of the farrier's hammer, which at once put the poor animal also out of pain.

Such is the pernicious virulence of the *saliva* thrown out by a mad dog, that all kinds of animals whatsoever, such as monkeys, swine, cats, oxen, horses, sheep, mules, foxes, wolves, and others, are not only liable to grow mad, upon being bitten; but also have, without any bite, been seized with the *hydrophobia* upon the sole contact and admission of a mad dog's *saliva*. And PALMARIUS † relates an instance of a countryman, who raving mad of this disease, and being informed he had not long to live, desired, in an intermission of his fits, that he might take his last farewell of his children, which the people who kept him tied down having consented to, he kissed them, and then was suffocated. However, on the seventh day the children were seized with the same illness, and died in the same cruel agonies and pains. He also

† PALMARIUS loc. cit.

has seen cattle killed by eating straw on which the slabber of mad animals had been left.

\* COELIUS AURELIANUS records a quicker progress of the infected *saliva*. He says, that a certain botcher-woman having taken a coat to mend, which had been torn by a mad dog, having drawn the threads through her lips to make them stick together, and having moistened the seams with her tongue, that her needle might pass through the easier, ran mad the third day.

Notwithstanding GALEN asserts ||, that dogs are the only animals which become mad without being bitten, or the least communication; many of the abovementioned creatures grow furious without any previous infection, but none so frequently as dogs, foxes, and wolves †. PALMARIUS † has seen twenty wolves, driven mad through hunger, sally out of a forest, and seize every living creature that came in their way, none of which escaped who were bitten.

\* Sartrix etiam quædam quum chlamydem scissam rabidis moribus, sarcinendam sumeret, atque ore stamina componeret, & lingua pannorum futuras lamberet, assuendo quo transitum acus faceret faciliorem, tertia die in *rabiem* venisse memoratur. COELIUS AURELIANUS De morbis acutis, lib. iii. cap. ix.

|| GALENUS, lib. vi. De loc. affect.

† BOERHAVII Aphorismi, 1132, 1133.

‡ PALMARIUS, loc. cit.

Doctor LISTER\*, and Doctor MEAD†, assign the true cause of the violent fermentation, raised in the blood of dogs either through heat or cold, by observing, " That no dog ever sweats ; and that as next to the miliary glands in the human body, the salival glands are the most constant and easy emunctories, through which the saline and active particles of the blood are discharged, more spittle is separated in a dog, when mad, than at any other time, and that very frothy, or impregnated with hot subtil parts."

Now whenever this discharge is obstructed, by too great a viscosity of the blood, from an increased circulation and want of dilution, the consequence of long thirst ; then the saline particles grow more acrid, and the absorbed biliary salts particularly acquire such acrimony, as to produce a high fever and *delirium*, by irritating the nerves, disturbing the secretion and course of the nervous fluid, and throwing all the laws of the animal œconomy into confusion, exciting such different and various symptoms, in persons of different sexes, and constitutions, according as Doctor MEAD rightly says, to the passions of the mind they are most inclined to. And in this morbid state of a dog's *saliva* the symptoms will be

\* LISTER, Exercitatio iii<sup>a</sup>, p. 133.

† MEAD, Essay on poisons, p. 138.

more

more aggravated, than those which attend the bite of an angered animal that is sound, and the patient will be in greater danger. Or whenever the blood and juices of a dog, cat, wolf, or fox, shall be so vitiated as to become putrid, by either of the causes already recited, then will a person, bitten by such animal, be exposed to all the fatal accidents which the admission of such a putrid, high fermenting *saliva* must naturally produce, by mixing with the blood and humors, particularly the nervous fluid, which is remarkably affected in putrid diseases of all kinds, but especially in pestilential and bilious fevers, wherein the acrimonious salts of the putrid bile absorbed into the blood, and also the dissolved state of the blood, which soon follows, vitiate the nervous fluid, at the same time that the coats of the nerves are both irritated and relaxed. Hence those irregular spasms, and involuntary contractions, all over the body, which bring on a tension, stronger convulsions, and at length, by drying up the nerves, and destroying the fluid commonly called the animal spirits, put an end to the motion of the necessary springs of life.

This disease, therefore, is of a different nature, and even more or less complicated, according to the season of the year, and to the state of the juices belonging to the mad animal, whether sound or morbid. Obstruction of perspiration will, in winter, produce fever,  
*deli-*

*delirium* and phrenzy, or madness ; long fasting, thirst, after violent exercise, salted, spiced, and all acrid meats : likewise \* worms bred in the stomach, intestines, and at the root of the nose, will have the same bad effects of producing madness, and the active particles of the dog, cat, wolf, or fox's *saliva*, rendered more subtil by the increased momentum of the blood, will be capable of infecting man or any animal that they shall bite with the same fermentating principles, and of bringing on the same fatal symptoms.

In summer, the humors of the body affected by tainted air, food, or by stagnating and corrupted waters filled with innumerable insects, both living and dead, are subject to a putridity, which is afterwards increased by the velocity of the blood rarefied particularly in the summer, and even in autumn, through the heat of the season. In man, this produces an

\* Some authors have been fond of the notion, that not only the *hydropobia*, but the small-pox, the *Lues Venerea* all cutaneous eruptions, and many other disorders are produced by worms, generated in the several humours of the body. That worms are admitted and multiplied in the first passages, and under the integuments both of man and beast, and occasion various complaints, common experience daily shows. But as professor ASTRUC has refuted, the existence of worms in venereal cases, I shall refer the reader to his opinion †, which will hold good in the examination of the vitiated *saliva* of a mad dog, in which no one as yet proved the appearance of any such vermin.

† ASTRUC de morbis venereis, tom. i. lib. ii. c. ii. p. 127, & seq. tom. ii. p. 1067.

acute, or a bilious fever, which deprives the solids of their contractile force, destroys the animal spirits, inflames the membranes of the brain, brings on a *delirium*; and either kills the person by convulsions, or by changing the whole mass of blood into *pus*, exposes the patient either to critical tumors, discharges of matter, a *marasmus*, or to some chronical disease, unless timely prevented. In the brute creation, the progress would be the same, were they not destroyed as soon as the fever appears, especially if attended with a phrenzy; for no sooner doth the *delirium* seize them, than that fatal effect of their biting comes on, and the blood then being in its highest degree of fermentation, has the more power to infect other bodies, and raise the same furious symptoms in them.

It appears therefore, that in different seasons of the year, there is a latent disposition in the fluids of dogs towards acrimony and putridity, which according to the various effects of those seasons manifests itself; and from an innocent secretion, turns the *saliva* of a dog to a most dangerous poison.

Here it may not be improper to describe the signs of the several degrees of madness in dogs\*.

The

\* In SIR THEODORE MAYERN's account, published from his papers, by SIR THEODORE DE VAUX, there are reckoned up no less than seven distinct sorts of madness or diseases, peculiar to dogs. 1. The *hot madness*. 2. The *running*

The madness, which through cold, seizes these animals like a phrenzy in winter, comes on so suddenly, as to afford no time for observation or caution, and many instances might be produced of house-dogs or others, biting their masters and keepers, without the least previous notice; and of the same furious effects being raised in the person bitten, by means of the acrimonious salts contained in the blood of the animal, and now let loose and discharged in its *saliva*.

In all seasons of the year, but particularly in summer and autumn, the madness arising from a putrid state of the blood doth not come on so suddenly: there are manifest signs of the animal being ill; the progress of the disease is gradual; and either quicker or slower, according to the elasticity and resistance of the solids, and the degree of putrescence, and acrimony of the salts circulating in the fluids.

The signs of a dog going to run mad, are these. He is first seized with a shaking and trembling, then grows thin, seems dejected, hides himself, refuses to eat or drink, hangs down his ears and tail, sneaks away growling, howls at times in a particular manner, flies

*running madness.* 3. *La rage mue*, or the *fuller madness.* 4. The *falling madness*, or *epilepsy.* 5. The *blasting* or *withering.* 6. The *sleepy madness* owing to worms. 7. The *rheumatic* disease. Of these he says, the two first are to be caught by the breath of dogs, and are incurable; the five last contagious, but curable. *Philosophical Transactions*, N°. 191.

upon

upon strangers, and carries his head as if he were sleepy. His eyes are watery, his nostrils drawn close, and discharging *mucus*, his mouth open, and running with his tongue dry, and of a bilious color.

In the second degree of madness, which is by far the most dangerous; a dog forgets his master, lays hold without distinction, of every person or animal who comes in his way, and without barking, bites and tears whatever he seizes. He now cannot swallow, and turns away at the sight of water. He opens his mouth wide, pants for breath, froths considerably, hangs his tongue quite out, which now turns of a livid color. His eyes are inflamed, and of a fiery red. He at times runs on furiously, at other times stands or lies down as if stupid, or half asleep; particularly during the remission of the fever, which constantly attends these symptoms, and whose paroxysms, and exacerbations are regular \*. In this condition, all other dogs shun him, and if they cannot well avoid him, they yield, and endeavor to soothe him.

There are several methods recommended by PALMARIUS and others, to discover whether a dog is mad that has bit a person, and has either made his escape, or been killed before the signs of madness could be observed. First, to apply a poultice of bruised walnuts to the

\* PALMARIUS loc. cit.

wound, and let it lie on the whole night, and then give it to chicken for food, and if the dog which has escaped is mad, the chicken will die in a day or two. Secondly, to sop up the blood running from the wound with a piece of crumb of bread, and offer it to dogs to eat, which they will refuse, if the dog was mad; or to feed fowls with the same sop, which will kill them in twenty-four hours, if the dog was in that dangerous state. Another method advised, where the dog has been killed, is to rub his mouth, jaws and nose with a piece of bread, so as to moisten it with the *saliva*; and in the same manner offer it to dogs, or to feed fowls with the same intention.

Some persons affirm, that such dogs as have been wormed, never bite others, although they run mad either spontaneously, or after being bitten by a mad dog, but no reliance is to be made upon such an assurance; since it is plain, that the danger of being infected is entirely owing to the admission of the *saliva*, which may have the same bad effect, being licked up by other dogs, or received into any wound; although perhaps the *virus* may not be so speedy in its progress, as when immediately conveyed by the bite of the infected animal. The extraction therefore of part of the *frænum* of the tongue, can be of no real use to prevent this calamity.

It is to be observed, that the *saliva* of a mad dog, cat, or other animal has no bad effect on the skin, any more than the venereal,

the

the leprous, or any other *virus* \*, provided the skin be whole, and that the part on which the *saliva* has fixed be immediately cleansed and well washed †.

But whenever the *saliva* of a mad dog is received into a wound, it takes the same course as the variolous matter, or the venereal taint; indeed in general, it is quicker in its progress, unless in some particular constitutions, wherein it has been known to lie dormant months and years ||. But the *saliva* of a viper, a rattle-snake, or a *tarantula* is quickest of all in its effects, which however vary, as to the time of their appearance in different constitutions; and as REDI remarks, the *saliva* of the viper frequently produces the most cruel and violent symptoms, bringing the creature bitten to the very brink of death, and yet the animal is not destroyed, but is cured without help or medicine, and by the sole power of nature ‡.

Children and young people are affected in a stronger manner, and sooner than persons more advanced in years §; owing no doubt to the different degree of velocity in the circulation of their blood. But no caution is

\* STALPART VANDER WIELEN, Observat. rarior centur. i. p. 413.

† DU CHOISEL's method of treating persons bit by mad animals, p. 20.

|| FREIND, Historia Medicinæ, 4to, p. 208. MEAD's Essays on poisons.

‡ REDI Experimenta Naturalia, p. 262.

§ DU CHOISEL's method, p. 18.

to be omitted, for although Mons. SAUVAGES \* says, that men are more liable to the most violent effects of this poisonous *saliva* than women; yet BARON VAN SWIETEN † observes thereupon, that men, by sweating through hard labor, may have discharged the venomous *virus*, while a person of a more tender, delicate, and cooler constitution, may feel the effects later, and die with more ease. An instance which I saw, will also comparatively shew the various effects of the *saliva* of a mad dog, on different species and constitutions of the same animal.

In June 1758, a mad dog ran into the court-yard belonging to the Rev. Doctor FAVELL, of Witton, in the county of Huntingdon: He bit a pointer in the heels, fought and tore two spaniel bitches, who then were suckling their puppies, a spaniel dog, and a greyhound bitch; after which he ran into the town, bit other dogs and a child. Three days after, near the full moon, the two bitches sickned, their milk dried up, they had not the *hydrophobia*, but died, as it were suffocated on the fifth day, without violent signs of madness, or any power of running or biting; but delirious and constantly barking and howling in a particular hoarse manner. On the seventh, the pointer grew dull, then furious, and was shot. The greyhound continued well, till the next full

\* SAUVAGES dissertation sur la nature, & cause de la rage, p. 7. Ann. 1748.

† VAN SWIETEN Comment, tom. iii. p. 549.

moon,

moon, when she became mopish, avoided company, and snarled at those she was generally fond of; upon which the symptoms increasing, she was strangled. The other dogs bitten in the town as well as the child, were in no sort affected. This verifies the opinions of all authors who have written on this subject, that the same vitiated *saliva* may have various effects according to the different constitutions of the animal or person bitten.

\* The general opinion of the most celebrated authors and practitioners, is, that the poisonous *saliva* of a mad dog insinuates itself into the wound made by the bite †, from whence it is absorbed in like manner with the variolous matter in the practice of inoculation, or like the venereal *virus*, and circulates with the blood; which by degrees it taints and affects the several humors, as also the nervous fluid, called the animal spirits; and by stimulating, causes frequent spasmodic contractions of the nerves,

Some account for the different progress of this *saliva* in like manner with the venereal *virus*, which according to professor BOERHAAVE and others, being lodged in the *cellular membrane* and there sheathing itself in the oily

\* PALMARIUS, De morsu canis rabidi, chap. i.

BOERHAAVE Prælectiones Academicæ, de morbis nervorum, tom. i. p. 214.

MEAD's Essays on poisons. Introd. p. 30, & seq.

† SAUVAGES dissertation sur la rage, p. 45.

VAN SWIETEN Comment. tom. iii. p. 551.

substance contained in the cells of the *membrana adiposa* lays dormant therein, until it beabsorbed by the *lymphatics* and conveyed into the blood vessels, wherein it circulates with the blood, and mixing with it sooner or later, unfolds its active principles according as they have been more or less sheathed. This makes no doubt, the wide difference between the slow advances of these acrimonious salts in persons of a lax or leucophlegmatic habit of body, or particularly when received into the fatty substance contained in the *cellular membrane*, and their quick progress when instilled directly into the blood, which can seldom happen without wounding at the same time the nerve which accompanies the blood-vessel; and thereby causing those spasmodic contractions and painful pulsations, which the known irritability of those parts will be liable to.

Others, however, will not allow that this poisonous *saliva* is conveyed by the blood, but account for all its effects from its *stimulus* on the nerves, which are thrown into spasms, convulsions, strictures, and involuntary contractions.

DOCTOR NUGENT adopts another system. He seems, in his ingenious essay, p. 133—139. to acquiesce in the existence of a nervous fluid, commonly called the animal spirits, but will not allow that they are tainted by the *saliva* of a mad dog, or that the several symptoms are produced by their means: nay, he doubts, p. 147. whether, "although undoubtedly

" edly poisoned liquors get into the circulation, it is not probable that they carry none of their malignity with them, but leave it all among the fibres of the part they first infect." And throughout the whole essay, he endeavors to account for all the symptoms arising from the bite of a mad dog, by the action of the *virus* on the nervous fibres, whose vibrations and oscillatory motions are first by the nibbling poison thrown into *spasmuli*, which being repeated, are progressively continued from one nerve to another, till they are put into violent contractions and affect some or other of the *viscera*.

It is not my design, by any means, to enter into a fruitless controversy. The opinions of PALMARIUS, professor BOERHAAVE, and doctor MEAD, are sufficient authorities for me; and experience justifies their assertion, that the nervous fluid, whatever it may be, is generally tainted in the fever raised by the bite of a mad dog. It would be endless to quote all they have said; I shall therefore only refer the reader to professor BOERHAAVE's, and doctor MEAD's thoughts, concerning the nervous fluid or animal spirits \*. And with regard to the effects of the bite of a viper, or the puncture of a nerve or tendon, they may vary greatly

\* BOERHAAVII Aphorismi & prælectiones academicæ de morbis nervorum.

MEAD, Essay on poisons, loc. cit.

in their consequences \* ; as possibly the first may be destitute of putridity, and yet have a sufficient acrimony to throw the whole nervous system into the same fatal convulsions as the puncture of a considerable nerve, or tendon commonly doth. But putrid diseases in general, and particularly those of the most active kind, as the plague, the small-pox, and *Lues Venerea*, are known to diffuse themselves all over the human body, and to affect distinct emunctories according to the different shape, figure and size of their acrimonious salts. Thus the pestilential matter affects the larger glands, as the *parotid*, the *axillary*, and *inguinal*; the small-pox, those of the skin; and the *Lues Venerea*, the testicles, the *inguinal*, and *salival* glands.

The putrid *saliva* of a mad dog has been compared long ago to the venereal *virus*, in its manner of being communicated and in its progress, by ALEXANDER MASSARIAS †, professor of PADUA, as professor ASTRUC records.

The more the salts in these putrid diseases are exalted and volatilized, the more violent is their effect on the nervous system, and the sooner is the nervous fluid tainted.

But to proceed to the symptoms incident upon the bite of a mad dog. I have already

\* Venenum pestilens, variolosum, rabiosum, alio modo communicatur, quam viperinum. BOERHAAVII prælectiones academicæ de morbis nervorum, p. 214.

† ASTRUC de morbis venereis, p. 842.

mentioned, that the pain and cure of the wound depended on the texture of the parts bitten; the same may be said of the bite of a mad animal as of an angered one; for the bites of mad dogs have been commonly found to heal without difficulty; indeed in some habits of body they scab over, and do not heal so firmly.

The first effects of a poisonous *saliva*, appear rarely before the third day; sometimes not till the thirtieth or fortieth, and some instances are related of the poison laying dormant two or three years; nay longer, and then breaking out \*. It generally shows itself at the full, or new moon †, when a sharp pricking pain is felt in the part where the bite was given, although the wound shall have been healed some time. Unless some nervous or tendinous part be bitten, the pain at first is not very violent, it soon however ascends, and spreads itself all over the muscles of that limb, causing a weariness; then darts up towards the throat and heart, and occasions a weight on the *præcordia*, and a great oppression, a continual quietude attended with fighings and soggings, a dullness and love of solitude. The person's mind begins now to be affected, he grows peevish and angry, and in his sleep he is disturbed, restless, and frequently awakened by frightful dreams. In the second stage of this disease

\* ETMULLERI opera, tom. i, p. 504.

† MEAD's Essay on poisons, p. 152, 153.

all the above symptoms increase; then come on flushing heats, a burning heat at the pit of the stomach, *nausea*, vomiting of dark and viscid matter, particularly a deep colored and porraceous bile; a fever attended with horrors, tremblings, *subfultus tendinum*, and convulsions. A great thirst, dryness of the throat, hoarsness, difficulty of swallowing liquids, but a possibility of admitting solids, a copious discharge of the *saliva* like froth, which the patient avoids swallowing \*, a costiveness, priapisms, or *furor uterinus* and *delirium*.

In the last stage, the patient is in the greatest fury; his madness increases with every exacerbation, and the remissions are attended with a cold sweat, as the pulse and fever fail: yet in the whole course of his fury he continues in his senses, and is so far from being mischievous or attempting to bite, that he is afraid of doing harm, and cautions the bystanders, lest he should lose his senses and prove hurtful to them †.

His

\* LISTER exercitationes medicinales, exercit. iii<sup>a</sup>. p. 114—117.

† Authors do not entirely agree in this point; but as the generality are of opinion, that the unhappy persons laboring under this disease are not mischievous even in very hot climates, I think proper to quote their several sentiments, that through fear of accidents such patients may not be deserted, want proper assistance, nor be put to a violent death, which is no less than murder, if the cruel custom of suffocating them should still prevail in any civilized country, and for which there can be no warrantable plea, since instances are

His appearance now grows shocking to behold. His eyes are inflamed, staring, and wild; the tears flow involuntarily, his nostrils are spread, his mouth open, his tongue hanging out, rough and black; his voice extremely hoarse, his thirst intolerable, terrified at the sight of any liquid, particularly of water, and indeed of any shining or pellucid object; as any thing white, a looking-glass, &c. He froths at the mouth, endeavors to spit at the by-standers. Such is the sensibility of the nerves, that a glaring light, the least noise, or the smallest breeze of cool air, throws the patient into horrors, spasms, and convulsions. The last signs are, an extension and rigidity

are produced of persons being cured who had the *hydrophobia* strongly upon them.

Quibus addo, quod equidem neminem hactenus vel audiverim latrare vel viderim mordere. TULPII Observ. Medic. lib. i. cap. xx.

Doctor MEAD says, that sometimes in their rage and fury they attempt doing all possible mischief to their most beloved friends and relations, but most commonly are melancholy, resigning themselves to death. Essay on poisons, p. 133.

Doctor DESAULT declares, that of all the persons whom he has seen seized with this madness, and that have even died raving, not one ever attempted to bite; nor did any counterfeit the actions or noise of animals, which had bit them. Dissertation sur la Rage, p. 322.

Monsieur DU CHOISEL saw only one instance of a young man who bit two women in the height of the fury. Method. p. 21. May not the heat of the climate, and constitution of the Indian, have produced this unusual effect? However, it is best to be upon one's guard in such cases.

of all the nerves \*, a total inability of swallowing liquids, a dread not only at the sight, but even at the mention of them, a *vertigo*, general convulsions, and death; which, from the time this fatal disease is manifest, happens mostly on the third day, although it seldom exceeds the fourth.

In such bodies as have been opened after this disease, it has appeared, that all the organs of deglutition are inflamed, that the stomach was filled with slimy and viscous matter, mixed with bile of a dark and porraceous color; that the gall-bladder was full of deep green-colored bile, the *pericardium* generally quite dry, the lungs greatly distended with blood, the heart, and also the arteries, full of a thin fluid blood, which doth not coagulate in the air; the veins empty, and all the membranes of the brain, *cerebellum*, *medulla spinalis*, and *viscera*, dry.

From the above-mentioned view of the bodies, and a consideration of the symptoms of this disease, doth it not appear, very plainly, that the putrid fermentative *saliva* of a mad dog circulates along with the blood †, acts as a powerful *stimulus* on the nerves and nervous coats of the arteries, renders the saline particles of the blood and humors more active and acrid, keeps the blood in a dissolved state,

\* *Hydrophobia homini evenit cum distensione nervorum.*  
LISTER Exercit. iii<sup>a</sup>.

† MEAD's Essay on poisons, p. 140.

is discharged by the salival glands down the *æsophagus* into the stomach, causing, in its course, a dryness, tension, pain, and inflammation, and throwing all the nerves, by its irritation, into spasms and contractions, which produce the difficulty of breathing, and of swallowing liquids ? That in a state of putridity the nervous power being destroyed, the heart and arteries can no longer contract, and therefore are found full of blood ; and that the acrimony of the bile, being increased by long fasting, and want of dilution \*, adds to the violent effects on the first passages, and helps also to affect the brain, and, consequently, the whole nervous system ?

\* Mr. HOLLWELL, in his Narrative of the deplorable death of the gentlemen suffocated at CALCUTTA, describes very strongly the terrible effects arising from the absorption of the bile into the blood ; the circulation of which was raised by the tumultuous passions of the mind, rage and despair, and the bilious salts being highly volatilized for want of air to breathe, and of liquids to dilute during the profuse sweats of the confined persons, brought on a *delirium*, loss of strength, and, to such as survived, putrid fevers.

## SECTION II.

## Of the Hydrophobia.

**C**OELIUS AURELIANUS, a physician of the methodic sect, who lived, as Monsieur LE CLERC records \* from REINESIUS, about the fifth century of the Christian æra, is the first author who has written largely of the *hydrophobia*, and described all the symptoms of it, with any tolerable exactness. In his time it was matter of great dispute among the physicians, whether the *hydrophobia* was known to the ancients, or was a new disease? The reasons alledged on both sides, may be seen at length in his treatise *De Morbis acutis* †. He is clear in his opinion in favor of the ancients; intimating, that although HIPPOCRATES does not particularly treat of this disease, yet he may be supposed to have alluded to it in the following sentences ||.

Οἱ φρενιτικοὶ έραχυπόλαι, ψοφε, καθαπλόμενοι,  
τρομώδεες.

\* LE CLERC Histoire de la Medecine, p. 556.

† COELIUS AURELIANUS, lib. iii. cap. xv.

|| HIPPOCRATES a FOESIO, lib. i. Prædict. p. 68. &  
coacarum prænotionum.

VAN SWIETEN Commentar. tom. iii. p. 536.

*Pbrenitici parùm bibunt, ex levibus strepitibus facile irritantur, ac percelluntur, tremuli sunt.*

Oι φρενίζοι. Εραχυπόλαι ψοφε, καθάπλομενοι τρομώδεες, η σπασμώδεες.

*Pbrenitici parùm bibunt, ex levibus strepitibus facile irritantur, tremuli sunt, aut convulsionibus tentantur.*

Persons in a phrenzy drink very little, are disturbed and frightened, tremble on the least noise, or are seized with convulsions.

ARETÆUS\*, in treating of the cure for phrenitics, mentions the very same.

† The methodics ranked all diseases under two classes; those which were caused by stricture, or tension, and those caused by relaxation. COELIUS AURELIANUS places the *hydropobia* among the diseases caused by stricture, or tension; and says, “ That it is possible for the same passion to be produced in bodies, without any manifest cause, whenever a stricture is spontaneously occasioned, like that which ariseth from poison ||.”

\* ARETÆUS De Morbis acutis, edit. BOERHAAVII, lib. i. p. 72. C. Ibid. p. 77. B.

† LE CLERC Histoire de la Medecine.

|| Est præterea possibile sine manifesta causa, hanc passionem corporibus innasci, cum talis fuerit strictio, sponte generata qualis a veneno. COELIUS AURELIANUS, lib. iii. cap. ix.

There is a great difference to be made between the difficulty of swallowing † which arises from a relaxation, and that which is known to attend the *hydropobia*. In paralytic disorders frequently attending upon old age, and in some sorts of *anginæ*, neither solids nor liquids can be allowed to pass; and the very attempt has endangered the patient, who has been almost suffocated. But to this \* difficulty of swallowing, in the *hydropobia*, a real † dread of water succeeds, particularly in those constitutions, and in that advanced state of the disease, when the stricture or tension is so great, the acrimony so considerable, the inflammation so high, the fever so strong in its exacerbations, and the irregular spasms of the nerves so far increased from partial contractions to general convulsions, that the fear of suffocation is become continual; in which case also it appears plainly, that the patient's mind is as much affected as the body.

¶ COELIUS AURELIANUS has written a whole chapter to prove, that the *hydropobia* is

† Medical Essays, vol. i. art. xxvii. Dr. GILBERT WAUGH's account of HART's daughter.

\* Δυσχλήπτοις.

† Υδροφοβία.

¶ COELIUS AURELIANUS, lib. i. cap. xiii.

All authors agree, that the whole body is affected, but more particularly the stomach and belly, and the head by consent. The *cardialgia*, *singultus*, and in some the retention of the excretions, plainly shew it.

is a passion of the body, not of the mind. That it is the effect of the bite, cannot in the least be doubted; but, moreover, that the mind also partakes of this effect, is as undoubtedly true: and such is the alteration to be observed therein, that either dejection, melancholy, or furious madness, are the constant attendants of it; which shews, that the nerves and *sensorium commune* are strongly affected.

But the *hydrophobia* is not always a concomitant symptom, although the disease excited by the bite of a mad dog should end fatally. The pain, fever, *delirium*, and convulsions, have appeared successively, and destroyed the patient on the third day, without the least sign of the *hydrophobia*, as Doctor MEAD acquaints us\*. And professor BOERHAAVE attributes "the variety of appearance and effects of this contagious *saliva*, both with regard to the time it breaks out, and its various symptoms, to the season of the year, the different degree of the disease in the furious animal, the constitution of the person bitten, bilious habits being the most easily affected, phlegmatic and dropical the least; and also to the several kinds of

Etiamsi rabie correptis, omnia exclementorum genera, ut plurimum retineantur. In uno tamen vidi, maximam, & ingentem urinæ copiam, excretam, sine ullo ægrotantis sensu. LISTER Exercit. p. 154.

\* MEAD's Essays, p. 147.

" food, and to the medicines which are administered \*.

The *hydropobia* is a symptom common to other diseases †; it frequently attends the phrenzy, and especially in hot countries. The sentiments of HIPPOCRATES and ARETAEUS have already been quoted.

¶ COELIUS AURELIANUS defines the phrenzy to be a disorder of the *meninges*, or membranes of the brain. These membranes serve as coverings to the nerves; and of course cannot be affected, without communicating the disease, in some degree, to the brain, and to such of the nerves as are contiguous to the seat of the complaint; or by their connexion and sympathy are liable to the same impression: whatever, therefore, causes an irritation on the *meninges*, an inflammation, a fever, spasmodic contractions, or tension; whether it be an ardent fever raised by the obstruction of perspiration, or by a translation of matter, called *metastasis*; or a sudden stoppage of the *lochia*, or *menses*; or by any sudden passion of the mind, such as anger, or fear; any of these causes may produce a phrenzy; and from a communication of the spasmodic con-

\* Pendet vero hæc diversitas, a calore tempestatis anni, a vario gradu morbi, in animali mortente, a temperie hominis mortis, quum biliosi, eo facilius vergant, pituitosi, & hydropici contra a diverso v&etu, medicamentis adhibitis, BOERHAAVII Aphorism. 1137.

† VAN SWIETEN Comment. tom. iii. p. 537.

¶ COELIUS AURELIANUS, lib. i. cap. i. & seq.

vulsions,

vulsions, may, to the other symptoms, add also the *hydropobia*.

In these temperate climates, diseases of so violent a nature are not so frequent as in hot countries; and whenever they do appear, their progress is not so speedy; which may be the reason why HIPPOCRATES had not an opportunity of seeing the intire *hydropobia*, either in phrenitics, or persons bitten by mad animals; the illness destroying them on the first appearance of the difficulty of swallowing; whence they were called *βρακυπόται*, *parvibuli*. The few instances, therefore, which are met with in these climates, it cannot be improper to relate. The appearance of that terrible symptom in several diseases, and the instances, however few, in which remedies have been applied with success, may take off from that universal dread, and shew that it is not always incurable.

In April 1758, a farmer and grasier, about 40 years of age, of a sanguine constitution, was seized with a violent pain a little above the *pubis*; an inflammation on the neck of the bladder, and total stoppage of urine, ensued. He was bled, purged, and lenient diuretics were given him. The symptoms abated upon a discharge of purulent matter, which shewed that the inflammation had terminated in an abscess. On the third of May the man, having some evenings before taken cold by going after some cattle in the wet, was again seized

with the same symptoms, but to a greater degree of violence ; the suppression of urine was also total, and to a high fever and *delirium* succeeded a phrenzy, and such a furious madness, as to equal the most disordered person. In this situation I found him when Mr. LITCHFIELD, an ingenious surgeon and apothecary at *Ramsey*, in the county of *Huntingdon*, first sent for me. To all the signs of madness of the most mischievous kind it must be added, that in his lucid intervals, which were chiefly in the morning, he could not on the fifth and sixth of *May* swallow the least drop of liquid : he grew outrageous at the presenting it, spitting in the faces of his nearest relations, as well as others, and telling them they meant to choak him. By plentiful and repeated bleedings, and emollient clysters, bladders half filled with warm water and milk, and applied to the *pubis*, fomentations, *pediluvia*, shaving his head, and washing it with a lotion of *elder-flower* water with *vinegar* and *camphor*, the convulsive spasms and the phrenzy were abated. Oily and *terebinthinate* clysters were injected, and when a passage could be had, lubricating, cooling, laxative, and diuretic medicines were administered, which removed the complaint. But, as he had been unavoidably brought low by the repeated evacuations, it was a long time before he recovered a settled state of mind ; which, however, returned perfectly, by means of the *cortex Peruvianus*, with proper restoratives,

ratives, and change of air. At first the blood, I saw drawn from this person, was very black as it ran out; when cold, the grumous part was of a loose texture, and the serous part an entire cake of purulent jelly containing it. This appearance in the blood, was certainly a proof of the *metastasis*, or translation of matter from the bladder, which had caused all the terrible effects before related.

Doctor MEAD quotes from SCHENCKIUS, that the “*hydrophobia* has been remarked in “malignant fevers;” and from the *Ephemerides Germanicae*, that “a melancholy has “ended fatally by this symptom.” And this learned and experienced physician has seen “the *hydrophobia* last many hours in an hysterical disorder, and in a case attended with “fits of a palpitation of the heart, wherein “the violence of the symptom seemed not to “differ from the true *hydrophobia*.”

That this symptom is common to nervous diseases, is also Doctor MEAD’s opinion \*. The suffocation called the *globus hystericus*, and so frequently met with in hysterical cases, has been produced, and increased to the *hydrophobia*, upon a suppression of the *menses*, or of the *lochia*. I attended a young girl of sixteen years of age, of a plethoric constitution, who from a suppression of the *menses*, on their

\* MEAD, *Essay on poisons*, p. 147.

first imperfect appearance, had all the hysterical symptoms, to the highest degree: they were followed by a *mania*, which lasted some days. During this, she had a difficulty of swallowing\*, and the *hydropobia* two or three days, which was removed by plentiful bleedings, both in the foot and arm, and by *semicupia* and glysters; but until the course of the *menstrua* became regular, she was periodically disordered every month, so that she could not be deemed rightly in her senses till that time.

I shall have occasion hereafter to mention another case, owing to the sudden suppression and retention of the *lochia*, when I come to shew the fatal consequences arising from the turbulent passions of the mind.

In the Medical Essays, Doctor INNES has recorded, very circumstantially, the case of a young gentleman who had an inflammation of the stomach, attended with the *hydropobia*†. Although the young lady who was under my care, and of whom I have given an account in the Philosophical Transactions ||, had not only a difficulty of swallowing, but a total stoppage, so that the least drop of any liquid could not be admitted into the stomach,

\* See Doctor ECCLES's Account of a great difficulty in Swallowing and *Tetanus*, in the Medical Essays, vol. v. part ii. p. 472.

+ Medical Essays, vol. i. art. xxix. p. 283.

|| Philosophical Transactions, N° 495.

nor, at times, far into the *œsophagus*; yet she had no dread at the sight of water, or of any fluid. The evacuations which she had undergone, before I attended her, might have prevented that degree of acrimony which was the cause of the *hydropobia* in Doctor INNES's case, where the cure was at length effected by repeated bleedings, and a spontaneous vomiting.

\* In that kind of catarrhal flux from the salival glands, and distension of the lymphatic vessels, which, from the seat of the disorder, the *bronchi*, is called the *brancks*, or more usually the mumps, and chiefly affects young persons about the age of puberty; upon taking cold, or an improper treatment, the serous matter is often translated from the throat to the testicles, which grow hard, and the *scrotum* is much enlarged, and becomes painful, through its weight: unless this symptom be also carefully attended to, a translation of acrid matter is sometimes, by a sudden *metastasis*, thrown upon the membranes of the brain, and this translation is followed by a fever, *delirium*, phrenzy, spasms, and convulsions; which, if not timely remedied, will prove fatal. Such a suffocation as the *globus hystericus*, is generally observed to be one of the symptoms;

\* HOFFMANNI Consultationes Medicinales, tom. ii.  
casus cii. De test um consensu cum cerebro.

and from the spasmodic contractions of the muscles of the throat, a difficulty of swallowing renders such patients what HIPPOCRATES calls them, *Βραυπόται*, *parvibibuli*, small drinkers; whenever this disease, as COELIUS AURELIANUS observes, is attended with a stricture, or tension, not in case of a relaxation: both which different effects of stricture, tension, or relaxation, appear in this illness. In southern climates the translation oftner occurs than in northern countries. The first time I saw it to any considerable degree, was in the spring of 1760, when it appeared like an epidemical disease affecting the private soldiers, and chiefly the married men, belonging to both the battalions of the *Essex* militia, quartered in the county of *Huntingdon*, during the months of *February*, *March*, and *April*, particularly. The season, no doubt, prevented the violence of the symptoms, which would necessarily have followed in a hotter time of the year. I visited several with Mr. GORDON, who attended as surgeon to the first battalion: none died, although some were in a high fever; and one of my private patients was delirious. Agreeable to this, is the doctrine of the venerable HIPPOCRATES \*, concerning the sympathy between several parts of the human body; and TULPIUS, on another occasion, not very fo-

\* HIPPOCRATES Περὶ τροφῆς; *De Alimento.*

reign to the present inquiry, gives the following excellent caution \*.

“ Let it therefore be carefully inquired by  
“ physicians, what kind of humor nature ex-  
“ pells, and let them be strictly on their guard  
“ that it doth not overflow, lest it should shift  
“ from a place of little moment, to a more  
“ noble and considerable part.”

The intimate and strict connection between the body and the mind, although inexpressible to our limited conceptions, is nevertheless so evident from its effects, as not in the least to be doubted. Thus the diseases of the body influence the operations of the mind, and the several passions of the mind, either promote, disturb, suspend, or destroy the natural functions, and the secretions of the human body, according to the different powers the several passions have allotted them. Joy dilates, exhilarates and circulates the blood with the most agreeable sensation. Grief relaxes, debilitates and suspends the necessary streams of life. The tender passions of love and friendship warm the blood, and give it fresh vigor. The turbulent passions, on the contrary of wrath and fear contract the vessels, and hurry the circulation of the blood in so violent a manner, as to throw the whole frame into confusion.

\* Inquirendum itaque curiosè, medicis, in naturam humoris a natura expulsi, & cavendum obinxè, ne facili regurgitet, a loco ignobili, in partem principem. TULPII Observ. medicinal. lib. i. cap. ix.

Whenever these two wrath and fear are raised together, there is a terrible scene produced, if an instantaneous death doth not end the tragedy by a sudden apoplexy; a palsy, a phrenzy, or epilepsy, follow in sanguine constitutions; convulsions, tremors, *schirrus*, cancers and many weaknesses attend those of a lax and cacochymic habit of body. But the limits of this essay will not allow me to expatiate farther on these particulars, I shall therefore confine myself to the remarking only by a very strong instance the fatal effects of the violent passions of † wrath and fear operating alternately and jointly in the same person.—An instance in which not only a phrenzy, but what is much to our present purpose, a total alteration of the fluids, and an *hydropobia* were produced.

A young woman about 27 years of age, of a fair complexion, delicate constitution, good habit of body, of a lively and sweet temper, but rather of a timorous disposition; in child-bed of her fourth child, was on the eighth day from her delivery, in a fair way of recovery, and receiving the usual congratulations of her female acquaintance. Among other visitors came a relation with whom there had been some fa-

† Doctor GEORGE BAKER in his dissertation *De affectionibus animi* mentions the several opinions of poets, and of philosophers †, anger was looked upon as a temporary madness, and the spasmodic contractions through fear are elegantly described ||.

‡ GALEN, HORATIUS, lib. i. Epist. iii. *Ira furor brevis est.*

|| LUCRETIUS, &c.

mily disputes. This person very unseasonably revived the quarrel, and after the most aggravating provocation insulted the lying-in woman with the most bitter invectives and most opprobrious language. The by-standers fearing that even words would not satisfy her revenge, with great difficulty removed her out of the room; but irreparable mischief was already done. Anger and fear had been raised so strongly in the mind of the patient, that unable to retort any longer to the revilings of her adversary she fell into a violent hysterical fit, little inferior to the highest degree of an epilepsy \*.

The *lochia* instantly stopped, the milk disappeared, a suffocation, fever, and phrenzy ensued. Early next morning I was sent for, and immediately had her blooded plentifully in the foot, *pediluvia* and clysters were used, and deobstruent bolusses given; although she attempted several times, not a drop of liquid could be swallowed on account of the frequent spasmodic contractions. Blisters were applied to the thighs and legs; the head was shaved and washed with a lotion of *camphorated vinegar* and *elder flower* water, but all my endeavours proved ineffectual. The tension was so

\* Nonnulla etiam excrementa quæ in utilitatem vitæ nostræ instituit providens natura suscepto metu, sibi protinus, & cessare, res est medentibus nimium familiaris. Notum est, nimis quam gravis sit ille puerperæ, lactanti que, abortus scilicet inde nasci, cum læthali hæmorrhagia, sibi lochia, coire lac, &c. BAKER de affectibus animali, p. 17.

great,

great, that neither opiates, *camphor*, nitre, nor repeated applications of bladders filled half full with warm water and milk, and applied to the *hypogastric* region could relax. The nervous contractions increased so fast, that general convulsions succeeded with such perturbations of mind upon their remission, that the least sight of a pellucid object, the light, the least noise or rustling of cloths alarmed her with the fear of her relations return. Thus she continued three days. A few hours before her death she recovered her senses, but could neither swallow nor bear the sight of liquids; she then knew me, and told me that she doubted not I had done my utmost to save her, but that it was to no purpose; and laying her hand upon her heart, added, that she was wounded too deeply there.

A symptom not to be forgotten, and which shewed the violence of the fever, was, that no urine was discharged but by force, at the time of her convulsions when they were the stronger, and then it was as a jelly of the most tenacious kind. The celebrated professor HOFFMANN \*, has recorded the violent effects of anger and fear in several of his observations, and imputes the appearance of the various symptoms to the irregular circulation, and

\* HOFFMANNI Consultationes medicinales. De terroris indole, tom. i. p. 20. casus vii. De terrore in puerperiis, tom. i. p. 196. casus xxxvii. De effectu terroris, & iræ, tom. ii. p. 225. casus xlviij. &c.

want of a due secretion of the fluids, which the passions of the mind suddenly bring on; and his prescriptions all tend towards the removing the tension and obstruction.

Thus from the several instances produced from authors and others just related, the *hydrophobia* appears to be a symptom common to several diseases, and particularly in cases attended with spasmotic contractions of the nerves of the throat, and increased by the violent passions of the mind, chiefly anger and fear. The sight of liquids or of any pellucid object, equally act on the unhappy person, whatever be the cause that produces the pain; for the admission of liquids in the least quantity conveys down the *œsophagus* into the stomach, the putrid, acrid *saliva*, which irritates the upper orifice \* and nervous coat of the stomach, and the *œsophagus* already inflamed, the *mucus* being dried up by the constant swallowing of the acrid particles; the sight also of a glass, of a white wall, or a glaring light striking strongly upon the *sensorium commune*, awakens the remembrance of the accident which has happened, and revives all the terrors which the bite of a mad animal had occasioned †. The

\* At salivam deglutire, ei horrendum fecit, perinde ac si mortem ipso momento inferret. Vide historiam JACOBI CORTON in exercit. iii<sup>a</sup>. LISTERI p. 117.

† There be sights that are horrible, because they excite the memory of things that are odious and fearful. BACON's sylva sylvarum experiments touching, pleasing or displeasing the senses, cent. vii. § 700.

*hydropobia*\*, therefore, is a constant attendant upon such acute diseases, as are dangerous through stricture and tension; and more particularly in the bite of a mad dog. Whenever this severe symptom appears, it is the more fatal; the greater the tension and inflammation, the longer the symptom has lasted; and from the different rigidity of the fibres, it is by far more difficult to remove in men than women. The signs of its approach, and the symptoms that usually attend it, have been sufficiently described in the former section.

\* *Hydrophobia est morbus acutus.* LISTER exercitatio iii<sup>a</sup>. p. 106.

## S E C T I O N III.

## Of the different Methods of Cure.

**T**H E different methods of cure, for the effects arising from the bite of a mad dog, are either rational or empirical.

By the rational is to be understood, the internal administration or external application of such remedies; which by experience, are found to remove or prevent the complaint in certain constitutions and circumstances of the distemper, and whose efficacy, may in a great measure be accounted for, by arguments founded upon observation, and according to the known power of medicines without the least presumption of their being infallible.

By the empirical cure, I understand the indiscriminate use of any *nostrum* or known medicine, in all degrees of the same illness, administered or applied to all constitutions and sexes, and in all ages, with a positive assurance of an infallibility, and whose operations are not only of a violent, and dangerous, or wholly insignificant nature, but will neither bear the test of examination by reasoning, nor a scrutiny into their success, the cases being frequently misrepresented, or the fatal consequences suppressed.

It must be owned, that mere accident has produced both in the early days of practice; and medicine hath gained great advantages from the observation of, and a due attention to, the *juvantia* and *tædentiæ*. Thus a rational method of cure, took its rise from accident, presumption and empiricism.

Was the world, with all its improvements in this enlightened age, sufficiently guarded against impositions, there would be no longer a necessity of dwelling upon the consideration of such absurdities, as are so many reproaches to the human understanding; but while through tradition, plausible authority, or presumptuous practitioners, mankind is still deluded, it behoves every one, who has the welfare of his fellow-creatures at heart, to point out to them the dangers which they run, by confiding in an empirical rather than a rational method of cure.

The plea of empirics is, that seldom doth any distemper appear in any person, as described by any systematical writer, and therefore facts are only to be relied on. Certainly, many circumstances may occur, to vary the appearance of an illness in different constitutions and situations; but whoever is furnished with a summary of the several symptoms of a disease, will be the readier to relieve the distressed, than by following indiscriminately the same method in every case, because he saw it succeed in one.

Systems unsupported by facts, are fruitless hypotheses; but when reason and experience agree, although they will never be infallible, yet they will jointly afford the greatest probability of success.

Both the rational and empirical methods, may be divided into the preventive or the actual cure. I shall begin with the empirical method.

And first, the most dangerous and absurd notion still prevailing in some distant ages, is, that if a person bitten by a mad dog, can immediately get the liver of the dog, and eat it raw or broiled, it is a means to prevent the progress of the disease. Every author, now a days, judiciously pronounces, that such a distempered liver is neither good for food or physic †, the bile contained in it being of the most vitiated kind; and although it has not yet been discovered, whether such bilious salts admitted into the stomach have only like other putrid humors produced a *nausea* and *diarhœa*; or, if passing into the blood, they have excited the same madness, as the bite of a mad dog; one may venture to declare an utter abhorrence of such food, and that it can be of no other account, than as it may procure some quiet to the patient's mind, by laying asleep for the present his apprehensions of the usual consequences.

† MEAD's Essay on poisons, p. 158.

These notions which Doctor LISTER calls the superstitious fancies of ancient times, seem to prevail still in *Ireland*, among the lower sort of people, and to obviate the repetition of such a shocking scene, as was related in a letter from *Gallaway*, inserted in the public news-papers, and dated the 11th of *February* 1760, I have been the more serious to explode such an absurd practice. I will relate the material circumstances of the horrid tragedy in the most tender manner possible.

" A gentleman in the neighbourhood of  
" *Slave Muree*, in the county of *Gallaway*,  
" writes word. That a young man, who had  
" been bitten by a mad dog, almost three years  
" before, was married to a young woman of  
" *Slave Muree*, and the very night of their nup-  
" tials, the relations alarmed at the cries of  
" the woman, burst into the room and found  
" him with her liver in his teeth. A knife  
" in his hand, and his wild aspect not to be  
" described, would not permit any one to ap-  
" proach him ; and to prevent further mur-  
" der, his own brother was tempted to shoot  
" him ; but he was secured by a noose thrown  
" over his neck, and tied down."

This case plainly shews the necessity of putting a stop to such a dangerous notion ; for no doubt, his imagination being heated, and the latent *virus* breaking forth, brought to his mind the representation of the dog, whom in the rage of phrenzy, he thought he was destroying ; and

and that, with the prepossession of curing himself, by eating of his liver.

The curd of a fucking puppy's milk, or the hair of the mad dog intended as a cure for the wound he gave, are applications to be laughed at.

The next ridiculous and idle tale, is the boasted effects from the presenting a *Hyæna*'s skin to the person bitten, or tying a piece of the same creature's skin in a linen rag on the wounded limb. The notion, it is said, takes it's rise from an aversion dogs have naturally for *Hyænas*; from whence it is strongly conjectured, that this canine distemper should be removed on the sight or touch of the *Hyæna*'s skin, and the venom at once frightened away by this sort of amulet.

The root of the *cynorrhodon*, the dog-rose, is now thought of no efficacy, although PLINY extolled it much; nor is much stress laid on the other properties of the *spongia cynorrhodi*, the sponge of the *dog rose*; but this shall be mentioned in speaking of the rational process of cure.

Among the empirical jumbles not to be trusted to, are the several *theriaca* \*, confusions, and specific antidotes hitherto recommended, to expell this poisonous venom, and which would much more speedily and effectually assist the mischievous effects of it.

Nor are family *nostrums* of any kind to lull any person into a fatal security, for they are

\* See Doctor HEBERDEN'S Essay on the *Mithridatium* and *Theriaca*.

generally nothing more than mutilated copies of prescriptions transcribed full of errors, and frequently directed for an opposite intention, notwithstanding the sanction of being carefully handed down, from year to year, in the same families.

I now proceed to the rational cure. This consists in such external applications, or internal remedies, as are administered, either to prevent the progress of the inoculated *saliva*, that it may not spread its infection, or to remove the bad effects of the poisonous *virus*, when it has already insinuated itself so far, as to produce the greatest mischiefs, and endanger the patient's life.

In the examination of the several methods directed, I shall endeavor to account for the intention of each practice.

First, In order to extract the *saliva* which by the bite may have been deposited in the wound. The ancients advised the application of || cupping-glasses †, to draw out the *saliva*; and made a plentiful discharge of blood by applying the *scarificator*: but this operation will not insure the removal of the *saliva*.

Nor will the sucking of the wound \*, to extract the *saliva* of a mad animal, be either safe, or to be depended upon: for although the venomous *saliva* of vipers has been sucked,

|| CELSUS, lib. v. cap. 27.

† PALMARIUS, p. 336.

\* Ibid. p. 338.

and

and received into the stomach without any bad effect ; yet it remains doubtful, whether that *saliva* lodged in a carious tooth, or admitted into any the smallest wound, in the mouth, would not be attended with fatal symptoms ; much more imprudent would it be, to apply the mouth to the bite of a mad dog, whose *saliva*, once admitted among the glands, or into the least wound, might produce the dreadful disease : and in this operation there is not a certainty of extracting the poison to authorise such a dangerous practice.

REDI, in his Natural experiments on the poisonous effects of the *saliva* of a viper, p. 263. says, that the admission of the poison depends on the sort of wound made : if too small, the *virus* will hardly penetrate ; if too large, the effusion of blood will be so considerable, as to bring away the poisonous *saliva* along with it. Hence appears the use of immediate scarifications, without cupping, where the part will allow of them.

Secondly, To enlarge the wound, either by dilatation, or by taking the piece out which the dog had bitten, seemed a surer way of dislodging the poisonous *saliva* ; but, as Doctor MEAD observes, the severity of such a practice is needless ; since it cannot always be done in time, nor can it be known whether the *saliva* has made any impression, or not.

The same may be said of cauteries, whether actual, or potential ; such as a red-hot

iron, caustics\*, corrosive or irritating ointments, blisters, or drawing plaisters || ; whose application is more painful and terrifying to the patient than promising, in it's consequences of success †. Issues are recommended, by *AETIUS*, to be kept a long while open.

Some have advised the rubbing a pickle of *salt* and *vinegar* on the wound; Doctor PARSONS has lately recommended it: and the Rev. Dr. JARED ELLIOTT has seen the success of it in *New England* and *Connecticut*. A surgeon of Doctor PARSONS's acquaintance, also, has successfully made use of the *spirit of salt* with the same intention, to resist acrimony and putrefaction. Others have washed the wound with a *lixivium* of *oak ashes* and *urine*.

Emollient cataplasms of *bread* and *milk*, either by themselves, or together with opiates, as the *theriaca*, or pure *opium*, have been laid on the wound to assuage the pain, decrease the irritation, and relax the fibres. Others have made pultices of *forret*, *rue*, roasted *onions*, bruised *garlic*, *leeks*, *yeast*, *mustard seed* and *salt*, and *oil of scorpions*, to irritate the wound, and cause a discharge of the poisonous *saliva*. Some have anointed the part with *oil* and pure *wine* mixed together, or have washed it with fat broth. And the *anus*

\* LISTER, Exercitatio iii<sup>a</sup>, p. 136.

|| PALMARIUS, p. 337.

† FREIND Opera, p. 146.

of an old cock is directed to be put to the wound, to draw out the *virus*\*.

† Bleeding, even till the person is faint, has been practised with great success, especially in sanguine and plethoric constitutions, to remove the fulness and irritation, and to prevent the stricture and tension, both as a preventive cure, and in the confirmed state of the illness; and yet some disapprove of bleeding, at first, lest the *virus* should be drawn in, from the external parts, to circulate with the blood all over the body.

So generally has almost every nation adopted the notion, that the immersion, or plunging the person bitten into the sea, is an infallible cure, that whoever has been found to controvert it, has seldom been hearkened to: but, among other instances which might be produced of the inefficacy of this custom, and that the only advantage accruing from it, is to quiet the person's mind who has been bitten; Doctor DESAULT relates ||, that his uncle DAUBAIGNAN, and DUFOURC his fellow student, both died mad, although they were both dipped in the sea, and went to the sea-

\* PALMARIUS, p. 337.

Philosophical Transactions, N° 191. p. 140.

† SPEED Commentarius de Aqua marina, p. 25.

Doctors HARTLEY and SANDYS account of a person cured of the *rabies canina* by losing 120 ounces of blood, Philosophical Transactions, N° 448.

|| DESAULT Dissertation sur la rage, p. 287, 288.

shore the very next day after they had received the bite : and adds, that he could easily swell the bulk of his Dissertation, were he to mention the great number of unfortunate persons to whom bathing, or, as he describes it, forcibly plunging \*, into the sea, was of no sort of use.

Immersions are recommended and first mentioned by CELSUS †, who says, “ It is “ the only remedy ;” and advises to “ throw “ the person unawares into water, and, if he “ cannot swim, to be kept under water, that “ he may swallow it, and then, at times, be “ lifted out of it ; if he can swim, to hold “ him under by force, that he may drink, “ whether he will, or not : by these means “ the thirst and dread of water will be re- “ moved at the same time.”

As CELSUS makes use of the word *piscinam*, a fish-pond, or pool of water ; it is plain, he means fresh, not salt water. VAN HELMONT ||, in the beginning of the last century, observing the good effects of plunging in the sea in *Flanders*, strongly recom-

\* Ibid. p. 288.

† Unicum remedium est, nec opinantem, in piscinam non ante ei provisam projicere, & si natandi scientiam non habet modo mersum bibere pati, modo attollere ; si habet, interdum deprimere, ut invitus quoque aqua satietur. Sic enim simul, & sitis, & aquæ metus tollitur. CELSUS, lib. v. cap. 27.

|| VAN HELMONT, *Ortus Medicinæ*.

mends the practice ; and Monsieur MORIN relates ‡, that a young girl, of 20 years of age, had all the symptoms of madness, which appeared sixteen days after her being bitten in the hand, by a little boy who was mad, and was brought to bear the sight of water, without emotion, by being plunged into a bath made of river water, rather cold than hot, in which a bushel of salt had been dissolved. Nothing extraordinary followed ; a fever came on, which was treated in the common method : she took emetics, continued the use of bathing, and was cured.

One would imagine that CELSUS had two intentions in his method of immersion : first, by throwing the patient into water unprepared, and unexpectedly to cause such a surprize as would give a strong shock to the human frame ; secondly, by half drowning him, to make him swallow a quantity of water before the *hydrophobia* comes on.

From the nauseous taste of sea water, the awful appearance of the sea, and the approach of it's roaring billows, strong effects may arise, in a person who never saw the sea before ; and more especially, if in the most terrifying and forcible manner they are plunged, and half drowned. The sea water is never so cold as fresh water is, and therefore cannot act on the fibres with the same constriction

‡ Histoire de l'Academie Royale des Sciences, année 1699.

which

which attends the immersion in cold spring or river water. By its acrid taste it will occasion vomiting and purging, and the shock which the nerves have sustained by the plunging, together with the strong impression left on the mind, will cause a considerable revolution in the humors of the human body, and help to dislodge the remaining active salts, after the first passages have been cleared of the vitiated *saliva* and bile which load and irritate the stomach \*.

But, notwithstanding these advantages attending the dipping in the sea, accidents may happen which will deter the most sanguine from following CELSUS's advice of bathing either in the sea, or otherwise, if the person is to be plunged unexpectedly, or forcibly.

The following instance, communicated to me by a person of credit, will shew how cautiously such attempts are to be made; since, like the old and absurd custom of affrighting persons by throwing them unawares into water, or by some other surprize, in the case of intermitting fevers, the patient has been freed, indeed, from one disorder; but, at the same time, subjected to another, no less terrible and calamitous.

This gentleman was, during his studies at *Oxford*, intimately acquainted with another

\* At cum *saliva* venenata præcipue noxia sit, illa imprimis evacuanda temperandaque ne stomachum amplius offendat. LISTER, Exercitatio iii<sup>a</sup> p. 136.

student, of the same college, who was of an amiable, and cheerful, but of a modest and rather timid disposition of mind. He was one day bitten by his favorite cat, which was supposed to have been bitten by a mad dog, and instantly, without allowing time for examining the creature, was declared mad, and killed. The young gentleman was then hurried away to the sea, and, as usual, forcibly plunged into it several times, out of which he was taken half drowned, and with this success, that no symptom of madness, or of an *hydrophobia*, appeared; but he became morose, and stupid, and continued so till his death, which happened three years after the immersion.

Doctor LISTER has recorded \*, from the authority of ARDOYN and of Doctor THOROUGHTON of *Nottingham*, that some persons have been suffocated by plunging them into water against their will: and I am favored with the following case by a physician of great rank and eminence, who not only remembers the fact, but saw Doctor ASHENHURST's written account of it.

A man, who was bitten by a mad dog, became mad, and had the *hydrophobia* on the approach of the full moon, and was ordered by the late Doctor ASHENHURST, of *Cambridge*, to be plunged into the cold bath near

\* LISTER loc. cit.

SIR JOHN HINDE COTTON'sfeat at *Maddingley* in that neighbourhood. The first immersion freed the patient of both the *hydrophobia* and madness. A month after, on the return of these symptoms, he was again plunged, and once more relieved: but, upon relapsing a third time, at the next full moon, and his being again put into the cold bath, he was seized with a total distension of the nerves, and immediately died convulsed in the water.

Doctor SPEED\*, who has wrote a very judicious and elegant commentary on sea water, tells us, that it has been a custom long since, to bathe in the sea for the bite of a mad dog: and that, provided the persons bitten bathe before the madness comes on, it often answers; but after it's appearance, bathing in the sea is never to be relied on. The Doctor adds, that he has by him the case of a girl, who, in the year 1707, having the *hydrophobia* strongly upon her from the bite of a mad cat, was perfectly cured by frequent scarifications of the wound, repeated bleedings, blisters, purgatives, and sudorifics: but as neither in this case, nor in any other, in the course of that great experience which Doctor SPEED, and his father, must have had of the utility of sea bathing, any mention is made of it's efficacy; it seems probable, that the boasted cures performed in this illness by sea water, have been wrought on such persons who have repaired

\* SPEED *Commentarius de Aqua marina*, p. 24.

to the sea shore, supposing themselves in great danger, when the dog, who bit them, may have never been mad. Undoubtedly cures so remarkable, and of so much consequence to society, would not have escaped Doctor SPEED's notice.

To Doctor DESAULT's testimony of the ineffectacy of sea bathing, for the preventing the *hydropobia*, at or near *Bourdeaux*, may be added, the observation of Monsieur CLAUDE DU CHOISEL\*, a *Jesuit*, and apothecary to the mission of *French Jesuits* at *Pondicherry*. His words are;

" Bathing in the sea has hitherto been  
" looked upon as an infallible preservative  
" against the bite of a mad dog. The ex-  
" perience which I have had of it in all those  
" patients who were not treated according to  
" my new method, has proved to me the fal-  
" sity of that opinion. They bathed them-  
" selves every day in the sea, but to no pur-  
" pose, not one of them survived the bite  
" longer than thirty or three and thirty days.  
" I do not, however, disapprove of those  
" batheings, where they serve to quiet the  
" minds of the patients. Besides, the *In-*  
" *dians* usually bathe themselves every day.  
" We are situated here on the sea shore, and  
" it is a matter of indifference whether a few  
" waves of sea water pass over their bodies, or

\* Du CHOISEL's Method of treating persons bit by mad animals, p. 18.

" they

“ they wash themselves in a pond. In this  
 “ hot country there is no danger of obstructed  
 “ perspiration, or pleurisies. If I were at a  
 “ greater distance from the sea coast, and in  
 “ a cold country, I would have nothing to do  
 “ with such sort of remedies, which I look  
 “ upon as entirely useless, in the cure of this  
 “ disease.”

Bathing in the sea has not, then, such advantages, as may not be procured by other means. For if the chief be the emptying the stomach of the acrid bile, by the swallowing of the sea water, this operation can be much more easily performed: and as to the immersion, the water is not cold enough; nor will any one recommend the forcible plunging, for the reasons above mentioned; and persons will be to the full as much satisfied in their minds, when they are convinced that an easier method of cure is practised than that of hurrying them into the sea, where there is not the same probability of success.

CELSUS \* not only recommends bathing in a pond as preventive cure, but even in the violence of the *hydropobia*: adding, however; “ that care is to be taken lest a tender  
 “ constitution, being affected by cold water,  
 “ should be seized with a distension of the

\* Sed aliud periculum excipit, ne infirmum corpus in aqua frigida vexatum, nervorum distentio absumat. Id nē incidat a piscina protinus in oleam calidam demittendus est.  
 CELSUS, lib. v. cap. 27.

“ nerves.

" nerves. To prevent which, says he, let  
" the person be instantly conveyed from the  
" pond into a bath of warm oil."

Professor BOERHAAVE, from CELSUS, directs cold bathing in the same manner as practised by the ancients, or to throw cold water on the person till the dread of water ceases. This method is thought to be rather exposing the patient to a greater tension and stricture of the parts. Doctor MEAD recommends cold spring or river water only as a preventive, and after bleeding to promote perspiration, and a flux of urine. Professor HOFFMAN prefers the use of temperate baths, in all strictures of the nervous parts, and moderate draughts of wine, to promote the circulation of the blood. The difference in opinion, between Doctor MEAD and professor HOFFMAN, with regard to cold or temperate bathing, may be reconciled by observing, that they are each directed in a different stage of the illness, and therefore are advised to be used accordingly. The constitution of the patient, time of the year, but especially the sort of infection, whether putrid, or not, ought certainly to be attended to; and unless bathing be cautiously ordered, it will oftner prove prejudicial, than salutary.

Internal medicines, of various kinds, were prescribed according to the practitioner's intention, either to prevent the ill effects of the

poisonous *saliva*, or with a view to expel it out of the body.

Thus, first, to cool and quench the thirst, the herbs *purslane*, *wood sorrel*, and *sorrel*, were recommended ; also, *burnet*, *burnet saxifrage*, *rue*, and *chervil*, as diuretics ; *marigolds*, *borage*, and *mint*, to warm and stimulate ; and *lettuce*, to procure sleep \*. The plant and stalk of *black currants* † is still looked upon in *Sweden* as no contemptible remedy in the *hydropobia*. It is well known, that in such countries which are liable to putrid and bilious fevers, the infusion of *black currants* leaves is in great esteem ; and a jelly of those currants, made with sugar, is highly commended in contagious diseases, and some sore throats. That all vegetable acids correct the too violent acrimony of the bilious salts, is the opinion of *BOERHAAVE*, *HOFFMAN*, *MEAD*, *HUXHAM*, and almost all modern physicians ; but this is only a palliative cure. I therefore proceed,

Secondly, To consider the intentions for which more powerful remedies are administered.

\* *PALMARIUS*, p. 343.

† See Mr. JOHN GEORGE BEYERSTEIN's obstacles to the improvement of physic, in *Miscellaneous tracts translated from the Amænitates Academiæ Upsalensis*, by Mr. STILLINGFLEET, p. 173.

I. \* Some were designed to sheathe the humor, and carry it down; as the *oil of roses*, drank to five ounces †: as purgatives, the expressed *oil of walnuts*, the nuts themselves, and *biera picra*. But the most efficacious medicine, both as a purgative, and an emetic, and which has not only been greatly extolled by the ancients, but is still made use of, with success, to this day, and particularly for dogs, and other quadrupeds, is the *white bellflower* ||: one dram of this root, powdered, and drank in a draught of milk, or forced down, made up into a *bolus* with a little butter, has operated so strongly, both as an emetic, and purge, as to carry off all the symptoms which had appeared. The sooner it is given after the bite is received, the less irritation is to be feared from its operation; but, lest the patient

\* Oils have been both recommended and forbidden even so long as in GALEN's time. BAGLIVI condemns the too general use of oil in Italy; and BIANCHI says, that he has known bilious fevers increase after the oil of sweet almonds had been given. BARON VAN SWIETEN, in his Commentaries on BOERHAAVE's Aphorisms, declares, That the mildest and softest oil, when spoiled, is of the most putrid nature. The sweeter oil of almonds, that is expressed, grows so rank and corrupted in a few days, as to become very sharp, and scalds the throat while it is swallowing down. Aphorism 89. p. 130.

† LISTER loc. cit. & in historia JACOBI CORTON.

|| Illud quidem verum est, hoc medicamentum pituitam vehementer movere, evacuareque, quæ cum salivæ venenatæ proxima materia sit, sic fortè adjuvare possit. LISTER.

DIOSCORIDES, lib. iv. cap. cl. & in Theriaca, cap. ii.

should be too much weakened, the persons who advise this root, caution their patients against bleeding.

I was informed by the late Mr. HENRY BLAINE, of *Hartford* near *Huntingdon*, who had experienced the effects of the *white hellebore*, in many dogs, that he had successfully administered it in all stages of the disease, nay, when the fury and *hydrophobia* was so strong on the dog, that no one dare approach him: and the method he used was, to fasten the dog's head down between the prongs of a pitch fork, and then thrust down the ball made of the powdered *hellebore* and butter. *Hellebore* is also given, by way of sternutatory, or ehrine, in clysters, and applied in the form of a suppository.

PALMARIUS reports \*, that dogs having taken *hellebore* with *polenta*, were vomited, and immediately relieved from their madness. This method, taken from DIOSSCORIDES †, arises from a practice very common among the ancients, both *Greeks* and *Romans*, to drink large quantities of the *polenta*, to strengthen their stomachs, and cure them of a *diarrhœa*. The *polenta* is a decoction of oat bread toasted, in spring water, till it be of a brown color like coffee. PLINY says, that in his time it dif-

\* Addunt nonnulli, canes rabiosos elleboro cum polenta accepto vomuisse, & statim a rabie liberatos ad se rediisse. PALMARIUS, p. 339.

† DIOSSCORIDES loco citato.

ferred from barley meal in that it was much toasted, or parched, and sometimes the *Romans* mixed a little *linseed* with it, some *salt*, and *coriander* seed. It is mentioned by **HIPPOCRATES** \*, **ARETÆUS**, and **PAULUS ÆGINETA**; and especially recommended for the cure of the *cholera* †. Doctor **CHARLES AYTON DOUGLAS** has revived the use of this decoction in *Scotland*, and given an account of its efficacy, both on himself, and others. Doctor **DOUGLAS** orders it to be made out of bread baked without any leaven or yeast, carefully toasted as brown as coffee, but not burnt: as occasion requires, he sometimes adds wine to the decoction. Somewhat similar to this practice is the use of *barley water*, *toast and water*, and *water gruel*, drank chiefly in ardent and bilious fevers; and from the preference which Doctor **TISSOT** || observed his patients gave to *oatmeal*, agreeable to professor **BOERHAAVE**'s opinion, it may be fairly concluded, that in the disease produced by the bite of a mad dog, the *polenta* will prove as efficacious as in the *cholera*.

Some have given an infusion of the leaves of *rue*, of the inner bark of *elder*, of the inner green bark of *box*, to vomit and purge

\* **HIPPOCRATES** De affectionibus.

**ARETÆUS**, lib. ii. cap. v. p. 102, 104.

**PAULUS ÆGINETA**, lib. i. cap. lxxviii.

† Medical Essays, vol. v. part ii. N° lxv.

|| **TISSOT** Dissertatio de febribus bilioris, p. 75.

dogs; or those ingredients dried, and powdered, and made into cakes with flower and milk.

Professor BOERHAAVE advises clysters of *salt water*, with *nitre*, and a little *vinegar*, both to purge, and cool.

II. The ancients, in order to expel poisons through the pores of the skin, had their *alexipharmacæ* and *theriaca*; the first to remove the poisons of the mineral or vegetable kind, and the latter the poisonous *virus* of animals. For those purposes, they ordered all the warm spicy medicines they could collect: not only those renowned jumbles known by the name of *mithridatium* and *theriaca*, but also the pancake composed of oyster-shells, &c. which Doctor DESAULT records; the famous *Sicilian* antidote made by APULEIUS CELSUS, and yearly sent over to *Sicily*, as SCRIBONIUS LARGUS relates, were directed; but additions of the ashes of *fresh water crabs*\*, calcined oyster-shells, and of the filings or powder of *tin*, have been made, by way of precipitating or dispersing the venomous particles. The first was recommended by GALEN, ORIBASIU<sup>S</sup>, ÆTIUS RUFUS, and POSIDONIUS; and the *crabs* were directed to be calcined with the tenderest twigs of the *white vine*; these ashes were to be well sifted, and mixed with the powder of *gentian* root, to which was

\* DIOSCORIDES loco citato.

sometimes

sometimes added *frankincense*, as DIOSCORIDES advises\*: but giving *tin* is of a later date, and was much extolled by Sir THEODORE MAYERN, and Doctor GREW, and is commonly known by the name of *the pewter medicine*. There is very little difference between this remedy, as described in the Philosophical Transactions: Doctor BATES's *decoctum ad morsum canis rabidi*, and the *decoctum antilyffum* of Doctor FULLER; being composed of filings of *tin*, of *garlic*, and *rue*, boiled in wine, or strong *ale*, to which is added *London* or *Venice treacle* and *mitbridate*.

From the chief ingredients of these compositions one may easily conclude, that their efficacy was expected from their pungency and warmth. As preservatives against contagion, *garlic* and *rue* were anciently taken; all kinds of *treacles* and *mitbridates* have been thought to expel venom; and *tin* has been looked upon as a certain *vermifuge*; but yet no reliance is to be made upon these preparations, to remove the effects arising from the bite of a mad dog.

III. The next intention seems to have been to discharge the poisonous *virus* through the urinary passages by means of diuretics. With this view was the *spongia cynorrhodi*, or sponge of the *dog-rose*, directed; which, from its efficacy in *Sicily*, was called *all-heal*. The plant

\* *Ibid.*

*alyssum*, or *madwort*, *garlic*, *agrimony*, and *oxy-lapathum*, *sharp-pointed dock*, were also highly recommended. The effect of the *spongia cynorrhodi* is attributed to the great number of insects in that excrecence; whence, from its animal salts, it is deemed a diuretic: and, for this reason, Doctor MEAD says\*, that the learned BACCIUS, upon the authority of RHAZES and JOANNES DAMASCENUS, recommends *cantharides* infused in butter-milk, and made up into troches with flowers of *lentils* and wine; and Doctor KRAMER † boils ten grains of the fine powder of *cantharides* in an ounce and half or two ounces of the best *vinegar*, which is given warm to the patient in the *hydrophobia*. Whether this preparation destroys the troublesome, nay dangerous effects of the *cantharides*, I will not take upon me to determine; but as these insects abound with acrid diuretic salts, it is probable, they will produce, at least increase, the *priapisms*, the known consequences of *cantharides*, whether applied in blisters, or given internally in any form. The smallest blister will produce a strangury, in hot and bilious constitutions, notwithstanding it should be armed with muslin, or well rubbed with *camphor*; and even half a grain of *cantharides*, powdered, has brought on a strong *satyriasis*, or *furor uterinus*,

\* MEAD's Essays on poisons, p. 161.

† Commerc, Norimberg,

when given to youthful and vigorous persons of a warm constitution.

The *pulvis antilyssus*, first recommended by MR. GEORGE DAMPIER, and communicated by MR. SOUTHWELL to SIR HANS SLOANE, was published in the Philosophical Transactions\*; wherein SIR HANS SLOANE describes the plant to be not the *Jews-ear*, but the *lichen* †: and in 1721 Doctor MEAD desired this powder should be inserted in the *Pharmacopœia Londinenſis*.

Whatever success may have attended the *pulvis antilyssus*, it is certainly a powerful diuretic, and professedly ordered by Doctor MEAD with that intention, as a preservative against the progress of the poisonous *saliva* of a mad dog. Doctor MEAD was too well acquainted with the uncertainty of this climate, not to be convinced, that, of all the secretions by which the saline particles of the poisonous *saliva* could be discharged, there was none so likely to be obstructed as perspiration: and knowing, that, next to the discharge through the pores of the skin, the kidneys carry off the greatest quantity of lymph, and supply the want of perspiration; it was very consistent, in that great physician, to direct a remedy which he knew acted as a powerful diuretic. But it has been questioned, by some

\* Philosophical Transactions, N<sup>o</sup> 237.

† See a description of this plant taken from Mr. RAY, in Doctor MEAD's Essays on poisons, p. 166.

experienced physicians, professor BOERHAAVE, Baron VAN SWIETEN, and our accurate and ingenious botanist Doctor WATSON\*, whether the *lichen cinereus terrestris*, or *ash-colored ground liverwort*, is endued with that quality which Doctor MEAD attributes to it. From the Doctor's examination of this mossy plant so classed by professor DILLENIUS, the several portions of acid water, oil, and coal, containing fixt salt which were produced, by distillation, will determine the question, Whether it be a diuretic, or not? and suppose this plant not to have all the desired efficacy, the other ingredient in the prescription will easily be shewn to be sufficient, of itself, to have answered the intended purpose. In the original receipt, in Mr. DAMPIER's family, the proportions of the *liverwort* and *black pepper* were equal; but Doctor MEAD reduced the quantity of pepper to only one third of the whole, lest the pepper should be too hot. Whoever will inquire into the opinion of the ancients, may take the following extract from that great naturalist Lord BACON †. " Pepper, says he, " by some of the ancients is noted to move " urine, when given in great quantity; which, " being given in small quantity, moveth wind " in the stomach and guts, and so expelleth " by stool. But being in greater quantity, " dissipateth the wind, and itself getteth to

\* Philosophical Transactions, vol. I. part ii. p. 681.

† BACON's *Sylva Sylvarum*, cent. i. v. 44.

" the

" the mesentery veins, and so to the liver and  
" reins ; where, by heating and opening, it  
" sendeth down urine more plentifully."

Thus it appears, that pepper was, many years ago, acknowledg'd to be a diuretic ; and therefore the *pulvis antilyssus* may have answered Doctor MEAD's intentions, in many cases, although it was never looked upon, by that excellent physician, as an infallible remedy, any more than any other medicine. He well knew, it would not succeed in such cases where it might heat too much : he purposely, therefore, lessened the quantity, to prevent heating, and gave it in warm milk, that it might sheathe and lessen the acrimony of the *saliva*, carry the powder more easily through the first passages, and so into the blood. DIOSCORIDES \* and PALMARIUS recommend the use of milk in all cases of poisons : and as in the disease arising from the bite of a mad dog, the bile is visibly affected, the acescent quality of the milk renders it the more useful to correct the acrimony of the bilious salts. Doctor MEAD never imagined the *pulvis antilyssus* could be of use when the *hydrophobia* was once come on : it is therefore plain, that, after bleeding, he directed this powder as a preventive cure, to discharge the acrid salts by urine, which cold bathing would also assist.

\* DIOSCORIDES De vi et ratione demorum a cane rubioso in theriaca, cap. ii. PALMARIUS loc. cit.

IV. The poisonous effects of the *saliva* of a mad dog have very strenuously been asserted, by Doctor DESAULT \*, to arise from worms contained in the *saliva* of the dog, and propagated in whatever creature it be inoculated; but the dormant state in which this *virus* hath lain many years, before it hath broken out, is a sufficient argument to overthrow that *hypothesis*, however supported by the authority of BONETUS, ETMULLER, AVICENNA, and others. With a view of destroying those insects, he adopts and recommends the boasted powder prescribed by PALMARIUS, consisting of bitter and *vermifuge* herbs; to which Doctor DESAULT adds the *coralline*. PALMARIUS's † powder consists of, the leaves of *rue*, *vervain*, the *lesser sage*, *plantain*, *polygonum*, *common wormwood*, *mint*, *mugwort*, *bastard baum*, (*melissophyton*), *betony*, *St. John's wort*, and the *lesser centaury*, of each equal weight. These are to be dried, and powdered, and half a drachm of the powder is to be taken upon an empty stomach, and three hours before meals either with twice the quantity of sugar, or in wine, cyder, broth; or with honey, or butter, in the consistence of an electuary.

However ineffectual this prescription must appear, to every one who considers the case

\* DESAULT Dissertation sur la rage, article ii.

† PALMARIUS, p. 344.

for which it was intended \*, yet the same intention has produced one of the most salutary effects that mankind could receive, by suggesting to Doctor DESAULT a far more easy, and more certain preventive cure. He says, that from seeing worms of various kinds, and almost all sorts of verminous insects, and cutaneous eruptions, destroyed by *mercury*, he was induced to try what a mercurial unction would do.

This method of preventing the ill consequences of the bite of a mad dog, by a mercurial friction, was attended with all the favorable success, Monsieur DESAULT, the first inventor of it, could desire; and has since, by repeated cures, both in *Europe* and *Asia*, confirmed the utility of this practice.

His method is, to rub upon the wound, and all over the adjacent parts, one or two drams of an ointment made of, *one third part of mercury revived from cinnabar, one third part of human fat, and as much of hog's lard.*

The frictions are repeated every other day, in the beginning; after the third time, every third day; after the sixth, every fourth, till two or three ounces of the ointment be used; always proportioning the quantity to the strength, age, constitution, sex of the patient, and the state of the bite.

\* See the note at p. 16. of this Essay.

But

But should the patient have applied, many days after the bite ; he then orders the frictions to be daily repeated every day, for four or five days.

Doctor DESAULT very sensibly adds \*, that should the *mercury* occasion a slight salivation, it could not but be attended with good success : for, says he, the poison of the *rabies*, sticking to the *saliva*, and *mercury* naturally taking its course towards the mouth, can it be doubted that this sovereign antidote, in many disorders, should not also destroy that which occasions the *hydrophobia* ?

Common experience testifies, that, in the cure of venereal complaints, where *mercury* is applied, and a salivation is to be prevented, emollient clysters, or the mildest laxative and diuretic purges, turn the course of the humors, and prevent the usual effect of the *mercury* upon the salival glands ; so that, in this present case, where the tainted *saliva* is to be discharged, a salivation may be either encouraged, or checked, as the practitioner thinks most expedient.

Doctor DESAULT makes no alteration in the person's food, or meals, provided he avoids all excess. He allows the moderate use of wine, to raise the patient's courage ; and strongly recommends, that, far from leaving the person alone, he should be constantly in cheerful company ; who, however, must be careful ne-

\* DESAULT Dissertation sur la rage, p. 305.

ver to let their discourse turn on such subjects as have any relation to the patient's case.

The late Mr. JOHN DOUGLAS, a surgeon of great abilities, published in 1738, on a single half sheet of paper\*, his recommendation of the mercurial friction, for this very disease. He directs one dram of a mercurial ointment, consisting of

*One pound of pure quicksilver, and the same quantity of human fat, and of hog's lard, and two ounces of clarified turpentine, mixed according to art,*

to be rubbed into the wounds, and parts adjacent; and Doctor MEAD's *pulvis antilyffus* to be taken every morning in a glass of wine and water, water, or cow's milk warm. The unction is to be repeated every evening, and the powder every morning fasting, during three weeks, leaving off the unction two or three days when the mouth begins to be sore, to prevent a salivation. Then the *mercury* is to be purged off, and in about three weeks or a month after, when the patient has recruited, he is to use the cold bath.

It is plain, from these directions, that Mr. DOUGLAS's intentions were to discharge

\* A sure method of preventing, and the most probable way of curing, the *hydrophobia*, i. e. the dread of water, after the bite of a mad dog; a disease hitherto found incurable by the practitioners of all nations. By JOHN DOUGLAS, Surgeon, and F. R. S. February 26, 1738. Given gratis in *Lad-lane* near *Guildhall*.

the poisonous *saliva*, by the salival glands, by perspiration, and by the urinary passages. Where the *hydropobia* is come on, he advises plentiful bleeding, and the rubbing in a large quantity of the ointment into the *axillary* and *inguinal* glands, and all over the limbs.

To these intentions of discharging the poisonous *saliva* of the mad dog, through the salival glands, the pores of the skin, and the urinary passages, by *mercurial* applications, Monsieur Du CHOISEL's method is to be subjoined, as more efficacious in the climate he lives in.

In those hotter climates, the mercurial ointment is used with equal success. Monsieur Du CHOISEL \*, apothecary to the *Jesuit* mission at *Pondicherry*, in the *East Indies*, makes an ointment of

*One ounce of crude mercury, extinguished in two drams of turpentine; of mutton suet three ounces.*

The heat of the climate determines Mr. Du CHOISEL to prefer *mutton suet* to *hog's lard*. He rubs in one dram upon the wounded part, keeping the wound open as much as possible; the next day he repeats the unction on all the bitten member, and purges the patient with a dram of his *mercurial* pills; the third day

\* Du CHOISEL's method of treating persons bit by mad animals, p. 17.

he rubs the ointment only over the bitten part; he gives a small mercurial bolus, or the fourth part of the mercurial pills above mentioned. Thus he continues for ten days to rub in a dram of the ointment every morning, and to give the laxative bolus, which commonly procures the patient two or three stools, and hinders the mercury from affecting the upper parts. At the end of ten days, he purges again, with the same pills, and dismisses the patient.

The mercurial pills are composed of

*Three drams of crude mercury, extinguished in one dram of turpentine; of the best rhubarb, colloquintida in powder, and gutta gamba, of each two drams. The whole to be made up, with a sufficient quantity of clarified honey. The dose one dram.*

This method is only adapted to such persons who apply to Mr. DU CHOISEL, immediately after being bitten. After two or three weeks, the disease having taken a deeper root, Mr. DU CHOISEL increases the dose of the medicines, and continues them for a longer time. The dose is also proportioned to the age and constitution of children, a small quantity of the ointment is rubbed in for fifteen days, and he purges them, once in three days, with syrup of rhubarb. As to regimen, Mr. DU CHOISEL forbids his patients the use

of things tart or acid, of all crude meats, and such as are hard to digest.

Thus it is obvious, from Mr. DU CHOISEL's account, that crude *mercury* expels the poisonous *saliva* through the salival glands; and that, to prevent an obstruction in those glands, it is necessary, in the *East Indies*, to purge with the above mentioned pills. But what gives the greatest satisfaction, is the case he relates \*, of a woman who had the *hydrophobia*, and was cured by rubbing in three drams of the mercurial ointment, at a time, and so repeated, night and morning, till a plentiful salivation came on; which relieved her head, removed the *hydrophobia*, and cured her entirely; the salivation being carried off by a *dysenteric* purging, which was also remedied by means of a laxative electuary, with *rhubarb*, taken in the morning, and a dose of *diascordium* at night.

This serves to prove the efficacy of *mercury* in this disease, as well as in the *lues venerea*. And certainly *mercury* in a crude state, purified, and cleansed, has this peculiar advantage attending it, well known to those who administer it frequently, that it neither irritates, nor is so uncertain in its operation, as most mercurial preparations are; for which reason it is safely applied externally, and may

\* P. 25, 26.

be given internally, in a state of inflammation, in this disease, as well as in the venereal one. Experience demonstrates the success of crude *mercury*, in Monsieur Du CHOISEL's curing above 300 patients, from the year 1749 to 1753.

In *Asia*, and *Europe*, mercurials have been given internally, to prevent the bad effects arising from the bite of a mad dog; and I should have mentioned them, according to the time of their being introduced into practice, before Messieurs DOUGLAS and DU CHOISEL's methods, had not these two practitioners followed the same intentions with Doctor DESAULT; and therefore it was proper to place them in that order.

In *Asia*, where the heat of the climate produces a profuse perspiration, and the inhabitants require a supply of animal particles, and of spirituous liquors, the *Chinese* make use of the following medicine; which, from its great success, was brought over to *England* by SIR GEORGE COBB, and Lady FREDERICK, in hopes it might prove as effectual in *Europe*, as in the *East Indies*, for the cure of the distemper arising from the bite of a mad dog.

The prescription is as follows :

Take of native and factitious cinnabar, of each twenty-four grains; of musk, sixteen grains: Let them be powdered, and well mixed together.

As soon as possible, after the person is bitten, he is to take this powder in a glass or tea-cup full of *arrack*. If no symptom appears, this dose is thought to secure the patient, for thirty days; but if the least symptom is upon him, then the dose is to be repeated three hours after.

From the composition of factitious *cinnabar*, and the chymical analysis of native *cinnabar*, it appears, that they are both composed of *mercury*, and *sulphur*, the first in a proportion of above three to one, and the latter of six to one of *mercury* to the *sulphur*. The other ingredient *musk*, is an animal substance, which promotes a gentle sweat, without heating, raises the spirits, eases pain, and usually brings on a refreshing sleep. It is known to be an excellent antispasmodic; and Doctor WALL has recorded in the Philosophical Transactions \*, it's good effects in convulsive disorders, particularly in two persons attended with *subfultus tendinum*, extreme anxiety, and want of sleep, from the bite of a mad dog. Doctor HUXHAM says †, that *musk* has a great power of expelling the morbid humors through the pores of the skin, without heating too much. And Mr. PRINGLE || has given sixteen grains of *musk*, with twenty-five grains of native *cinnabar*, and as many of *cinnabar*

\* Philosophical Transactions, N° 474.

† HUXHAM De aere & morbis, tom. ii. p. 125.

|| Physical Essays, vol. ii. p. 252.

of antimony, in a glass of brandy, to a lady, in a bad fit of the gout. Doctor HILL, in his *Materia Medica* \*, also commends *musk* as a cordial and antihysteric.

This prescription, then, is not only of use to the *Chinese*, as a diaphoretic, antispasmodic, and antihysteric ; but may be of great service, also, in *Europe*, especially among those who have no dislike to perfumes, or feed much upon animal food, and delight in spices, and high seasonings : but, notwithstanding I readily acknowledge the good effects of *musk*, in spasmodic, epileptic, and hysterick cases ; yet I must fairly own, that, in putrid diseases, where the *crasis* of the blood has been broken, and the *vis vitæ* much impaired, *musk* has failed me, in such constitutions as have been accustomed to a vegetable diet, and very little animal food : and when neither the *musk julep*, nor *musk* in substance, would take place, the *camphorated julep*, with acids, has succeeded. This doth not quite invalidate the use of the *musk* and *cinnabar*, in the case of a bite from a mad dog ; it may certainly succeed, even in our climate, as a preventive, but whenever the disease attains any degree of putridity, it will not be safe, entirely to rely upon it.

Doctor JAMES is the first practitioner, in *Europe*, who has advised a mercurial medicine to be taken internally, for the prevention and

\* HILL's *Materia Medica*, p. 861.

cure of this terrible disease. It appears, from his publications, that, towards the end of the year 1731, the Doctor recommended the use of *turpeth mineral*, or *mercurius emeticus flavus*, with the same intentions as this medicine is given in the venereal distemper; and from the success of it in which, he most probably took the hint.

In a pamphlet, printed in 1741, he writes to professor BOERHAAVE, that the following prescription had, in February 1732, cured two foxhounds, actually mad, and to whom neither dipping in salt water, nor the *tin* medicines, had done any good. He gave from seven and twelve grains, to twenty-four, of the *turpeth mineral*, to one dog, who had a plentiful salivation, and recovered.

As a preservative, Doctor JAMES prescribed to persons bitten, as follows:

*Take of turpeth mineral twelve grains, of compound powder of contrayerva one dram, of Venice treacle as much as is requisite to make three bolusses; one to be taken every night, with an antibysteric julep.*

This method was attended with success in the cure of a young man of eighteen, another of seventeen, and a girl of fourteen years of age, who were all bitten by dogs who proved mad; but not one of those persons had the least sign of an *hydrophobia*, nor any other aggravating symptoms, than dejection, and tremors.

mors. It does not appear that any external application was made to them, although the Doctor in this pamphlet, and in the succeeding edition in 1743, directs the use of Doctor DESAULT's mercurial ointment, and also the *pulvis antilyssus*, and *cinnabarine* powder.

In autumn 1760, Doctor JAMES published a loose half-sheet, of *Instructions for preventing and curing of canine madness*; in which, having labored much to prove himself the first inventor of the mercurial method, at least taken internally, which there seems no reason to dispute, although Doctor JAMES owns that Doctor DESAULT was the first that made use of the mercurial cintment, as Mr. DOUGLAS informed him; the Doctor proceeds to recommend the rubbing in of a dram of a mercurial ointment every day, during a week, and even twice a day, without raising a salivation. He also advises the *turpeth mineral*, but in less quantities, and with a different intention. The prescription is altered thus:

*Take of turpeth mineral from three to eight grains, according to the strength of the patient, and the degree of infection received; camphire an equal quantity, to be made with conserve of hips into a bole. To be taken three times, alternately, every other night.*

Doctor JAMES's intentions plainly appear, first, by his direction of the *turpeth mineral*,

the compound powder of *contrayerva*, and the *Venice treacle*, to have vomited and promoted both the salivary and cuticular discharges; but finding the irritation of the mercurial vomit too great to allow of the other ingredients to operate, he changes his design, and mixes equal quantities of *turpeth mineral* and *camphor*, to promote perspiration, and hinder the *turpeth*, as he says, from vomiting; but the *nausea* caused frequently by the *camphor*, will, probably, disappoint the intended effect; especially when the stomach is in a state of irritation, from the vitiated *saliva* admitted into it: so that even this mixture, long since recommended by medical authors, to sheathe the acrid particles of mercurial preparations, and to promote their operation, as alterants and dia-phoretics, in venereal cases, cannot be so well adapted, in the case of persons really bitten by mad dogs. The *turpeth mineral* can therefore only be given, with safety, at such an age, and in such constitutions as are of a relaxed texture, leucophlegmatic, or debilitated; in which, as in many venereal instances, the solids and fluids require a degree of irritation, to enable them to perform their functions and secretions: but where there is already a tension, which is likely to be increased, and produce spasms, a milder method of introducing mercury is to be

pre-

preferred, which, even in the highest degree of inflammation, owing to an acrid venereal *virus*, is known to have had all the desired effect, without causing the least pain, heat, or sensible inconveniency. And this is the introduction of crude mercury into the blood, by means of a mercurial ointment.

In the consideration of the following cases I shall endeavor to make it appear what kind of treatment, and medicines, have proved chiefly beneficial.

**SECTION**

## SECTION IV.

## OBSERVATIONS.

## CASE I.

*A NARRATIVE of an uncommon CASE, which happened about 25 years ago, in the neighbourhood of Salisbury, from the bite of a mad dog. Communicated by Doctor HELE, physician at Salisbury.*

**A** Young lady, about twenty years of age, and of a good healthy constitution, feeding her little favorite dog, at dinner, was bitten by the finger, so that it bled a little, on both sides, where his teeth had broke the skin; and she unfortunately sucked the blood, and spit it out. The dog had been full and sleepy all that day, and refused his victuals. The next day the gamekeeper, suspecting madness, confined him, and in two days he died.

The young lady, alarmed at this terrible accident, came the next day to me for advice. I ordered her to lose eight ounces of blood, from the arm, to take Doctor MEAD's *pulvis antilyffus* for six mornings, and, after that, to undergo the usual immersions in the sea, drinking

drinking half a pint of the same water, every morning, for a month. She observed the former part of these directions, and then repaired to *Southampton*, for the benefit of the sea water. The next day after her arrival, she was dipped; but being kept under water for some time, and then dipped again, and again, with very short intervals, she was so much frightened, that she could not be prevailed upon to bathe a second time, or so much as to drink the water; but she resided there the whole month (the time allotted for this course), and then returned to her friends, concealing from them the inexcusable omissions she had been guilty of: and they had not the least distrust but she had regularly conformed to the whole course prescribed.

She continued quite well, for five months, and about the expiration of that time she was seized suddenly with a chill, soon after she had sat down to make tea for the company who had dined there that day; and this little *rígor* was immediately succeeded by so total a *syncope*, that she fell from her chair, and remained speechless and senseless on the floor, for some minutes. She was carried up stairs, and soon put to bed, and some time after, she grew warm, and she had reachings to vomit. She took two ounces of *ippecacuanha* wine, with half a dram of *spir. lavendul. comp.* which had good effect, by relieving the great load and oppression on the stomach, and promoting a per-

perspiration, which kept her easy a good part of the following night: but in the morning I found her low, hot, and restless, with a quick weak pulse, and complaining of great weight, and uneasiness about the *præcordia*, with a *subsultus tendinum*, and frequent twitchings, and startings. Blisters were immediately applied to the back and arms, and sinapisms to the feet, and the diaphoretic medicines exhibited as usual in such cases. Every thing went on much the same that night; and finding the patient not at all relieved the next morning, but growing rather *comatose* and delirious, with the same low quick pulse, I ordered blisters to be applied to the head and thighs. The next morning I found her relieved of the *coma*, and *delirium*, but the *subsultus tendinum*, and convulsive twitchings, much the same; and the nurse told me, that she often, in the night, called for liquor, but could not drink it when brought to her. I never had, till then, the least thought of the bite of the mad dog; but now, being apprehensive that this symptom was somewhat of the *hydropobous* kind, I asked her whether she would drink a draught of any of the liquors appointed for her common drink. She expressed great desire of drinking, but said, the liquors offered her by the nurse went against her stomach. I asked her what she herself would chuse to drink. She thought, that if she could be indulged with some *Rhenish* wine and water, it would be

be the most agreeable draught she ever had in her life. Both were soon brought, and I myself mixed them, by the bed-side, that she might not suspect that we had, in any shape, deceived her. She caught at the glass, with great eagerness, but the moment it touched her lips, she pushed it from her, and, as I pressed it to her mouth, with some little force, she as strenuously pushed it away, and, with a small struggle, fell into a strong convulsion, which lasted some time, and seemed to be attended with the same sort of fulness of the throat, and strangulation, as frequently accompany hysterical disorders. I then pronounced the whole illness to be the effect of the dog's bite, and that this aversion to drinking was the worst symptom that could befall us. I ordered her a bolus with *cinnabar. antimon. pulv. ad guttetam, aa 3j*, to be given every six hours, which she swallowed tolerably well, but not a drop of liquid could be got into the mouth, even by force, without causing a return of the convulsive fits. The next morning, I ordered a blister to be applied all round the neck, as broad as her neck (which was naturally pretty long) would admit of, and the bolus to be repeated as before. The next day she would take down a little quantity of warmed liquid at a time, though it often seemed to put her into great agonies. After this manner, in short, we kept on, with the addition of five grains of *sal. volatil. ammoniac.* to each bolus ; the

the exhibition of glysters occasionally, and such other few discretionary alterations or additions, for ten days longer; when, after a gentle *diaphoresis*, for almost three days and three nights, the fever, and every concomitant bad symptom, entirely left her, and she got strength apace, slept sound and quiet sleeps at night, sat up for several hours at a time every day, and conversed very agreeably and sedately with any of the family who visited her.

Thus she went on for a fortnight, or longer, and then, one morning, after she had been up about an hour, and was talking, in a pleasant manner, with a young lady of her intimate acquaintance, she fell into a phrenzy, and, in less than an hour, seemed quite a maniac.

The pulse was very quick, and, though not full, yet she was blooded by force, a glyster given, and a large blister applied to the back part of the head, and all this time she attempted to bite every body that came near her, which she was never once inclined to do, in all her former fever. In this raving condition she continued for thirty hours, when she fell asleep, with the great fatigue, soon got into a profuse sweat, and became quite sensible again.

It is to be observed, that this paroxysm of phrenzy began about twenty-four hours before the new moon; and although it left her in the manner above mentioned, and she continued, apparently, as well as ever she was in her

her life, for the space of three weeks, and upwards ; yet, about thirty hours before the next new moon, the fever and phrenzy returned, with the same violence as before, but continued not above twelve hours, when it went off with the usual sleep, and sweat : and thus, for the space of five months longer, we had the raving paroxysms, and clear intermissions, more or less, about the time of the new moon : but every month the raving fits shortened, and the last of all held not above half an hour ; when she voluntarily threw herself on the bed, and slept and sweat as before.

During the whole time, the large blister on the *occiput* was kept open, the *cinnabar* bolus given twice in twenty-four hours, and gentle cordial purgatives were administered, as occasion required. The *catamenia* were regular, before, at, and after the whole course of the disorder. She pursued the same method for some months longer, the blister still kept open the whole time, as large as all the hinder part of the head would admit, and she had never afterwards the least symptom of any relapse, though she married about a year after, and had several children, and died about nine years after her recovery.

It is further to be observed, in the first place, That even the small preventive course she followed, may have protracted the appearance of any bad symptom for some months, and might likewise be the principal cause of their remarkable

able deviation from the common course of such fevers, when they did come on.

Secondly, I think it is to be considered, how far the blister, round the neck, might alter the quality of the *saliva*, remove that resemblance of a *hydrophobia*, and avail in restoring a power of deglutition, though with some difficulty.

And, Thirdly, I would beg leave to mention the power and efficacy, I have frequently experienced, of *cinnabarine* medicines (without *musk*), but joined with *pulvis ad guttetam*, in convulsions of almost all kinds, either with or without fever; and that, whenever I have added the *valerian* root, instead of the *pulvis ad guttetam*, it has generally stimulated too much, and increased, rather than diminished, the convulsive symptoms.

November 14,

1760.

H. HELE.

#### REMARKS.

This case is the strongest proof of the validity of Doctor MEAD's opinion, in favor of a nervous fluid, and of this fluid being particularly affected by the vitiated *saliva* of the mad dog: for it seems, without any previous or immediate effect on any of the blood-vessels, or on any of the tendons, or large nerves, to have been absorbed by the lymphatic vessels, and

and to have circulated through the whole mass of fluids.

The bleeding, and diuretic *pulvis antilyssus*, may, as Doctor HELE observes, have delayed the fatal effects some months; but the single immersion in sea water was of no advantage; since it only served to terrify the young lady to that degree, that she could not bear the thoughts of repeating the bathing.

No pain in the finger which had been bitten, and healed, without any particular care, in two or three days; no pricking, shooting, or darting pain up the arm, came on, to shew any particular irritation of the nerves externally. But at the end of five months, when near the full moon, a sudden chillness and *syncope* seized her, followed by reachings to vomit, oppression of the *præcordia*, attended with anxiety, a quick pulse, *subsultus tendinum*, and frequent catchings. Can it be doubted, that the nervous fluid and the whole mass of blood were wholly affected, and that this was an effort of nature to expel the poison? Nay, more; if it be considered, that, three days after, the *hydrophobia*, and *nausea* at the stomach, came on: is not this the critical discharge by which the acrimonious salts of the *saliva* were to be thrown off? and did not the blister, applied round the neck, and continued a long while open, serve to draw off, as in the *angina*, part of the humor from the salival glands, and, of course, lessen the degree of irritation

all along the *œsophagus*, which caused the *hydrophobia*? S. 11. No.

Ten days after this seizure, a *diaphoresis* broke out, which lasted three days, and three nights; and this sweating carried off the fever, and other symptoms. The *cinnabar* and *pulvis ad guttetam*, with the addition of *sal. ammoniacum*, produced this effect in the blood, and no extraordinary motion was found in it; during a fortnight after, her mind recovering also its serenity and cheerfulness.—But, about twenty-four hours before the next full moon, suddenly a phrenzy comes on, and the young lady becomes a perfect *maniac*; in less than an hour. She is furious, endeavors to bite, and, by means of a profuse sweat, she recovers her senses. Then symptoms return about thirty hours before the next full moon, last not so long a while, but every month, repeatedly five times, Doctor HELE saw them, and conquered them, at last, by a perseverance in the use of the *cinnabar* powder, and keeping a blister perpetually open on the back of the head.

Can there be stronger proofs of a nervous fluid particularly affected in this stage of the disease? Does not the power of the moon shew itself in those periodical returns? Does the least sign of inflammation now appear by the blood, and is it not owing to the seasonable evacuations, and, indeed, to Doctor HELE's whole prudent directions? Does not this

young

young lady's case set Doctor MEAD's opinion beyond all dispute?

I cannot pass over one very necessary observation; that, in the whole course of this disorder, the *menses* appeared regularly: therefore the blood had, all along, a due fluidity, agreeable to what professor BOERHAAVE, and other authors, have observed\*.

### C A S E II.

**T**H E CASE of ELIZABETH BRYANT, published by Doctor NUGENT, deserves notice: and I have extracted it from the Doctor's Essay, in order to make some remarks upon it.

ELIZABETH BRYANT, twenty-two years of age, healthy, and of a good habit of body, chiefly sanguine, and phlegmatic, was, on the 23d of June, 1757, bit, by a mad turnspit dog, on the third finger of her right hand, which bled some few drops; and on the back of the hand, the skin of which was pinched through, but did not bleed. The sores healed soon, without any particular application; the dog died the next day. Upon her being restless and fretful, Mr. WRIGHT, a surgeon of reputation, ordered her to the sea, where she was dipped, till she could bear it no longer.

\* *Cruorem valde liquidum, & vix in aëre concrescentem.* BOERHAAVII Aphorism. 1140.

On her return he bled her in the arm, and gave her four doses of Doctor MEAD's *pulvis antilyssus*. On the 20th of July she was put into the cold bath, which treatment was repeated four mornings successively; then, upon complaining of a numbness and pain in the arm and shoulder of the hand that was bitten, SIR GEORGE COBB's medicine, of *cinnabar* and *musk*, was given. She thought her spirits greatly relieved, and said she was very well. The appearance of the *catamenia* prevented her using the cold bath next day. On the 27th of July, in the morning, about five hours before the full moon, she was, *all at once*, seized with a pain in the middle finger, and at the back of the hand, where she had been bitten, darting up her arm and shoulder, across her throat, and then she was afraid of being choaked; and used to lay hold of her throat as if to prevent it's closing up; could not bear the sight of water, nor hear even the noise of falling water, which, as also the barking and howling of dogs, brought on the pain to an intolerable degree, attended with a suffocation, short breathing, dizziness, risings at her, stomach, breast, and throat, and strong catchings, as if she was going into convulsions. In this state Doctor NUGENT visited her; and, by presenting a basin of water, was confirmed that ELIZABETH BRYANT was seized with an *hydrophobia*. She had immediately fifteen ounces of blood drawn, and a paper

paper of the *cinnabarine* powder was ordered to be taken every three hours, in honey; a pill, of two grains of the *extractum thebaicum*, every three hours, with the powders, till rest could be procured; and a plaster of *galbanum*, with half an ounce of the same *extractum thebaicum*, to be applied to the throat and neck. In the evening she was easier, and could recollect she had been blooded, and with great difficulty swallowed some broth. Her blood looked very well. The powders and *opium* pill were repeated every three hours, and the wounded arm rubbed with warm sallad oil, several times a day. The 28th of July she was bled again, to twenty ounces, and had a clyster of *antimorial* wine, the pills and powders repeated, and the sallad oil rubbed as before. She could swallow liquids better; was ordered ten grains of *turpeth mineral*, and another clyster. Monday morning, the 29th, she lost twelve ounces of blood, the powders continued, was directed to drink often of barley water with *nitre* and the *galbanum* plaster renewed. In the evening every way better, the pain in her arm and hand quite gone, but her fear of dogs and water remain. The *musk* and *cinnabar* to be taken as before, the oil to be rubbed in, and only two grains of the *extract* of *opium* to be given at night. Tuesday, 30th July, she was sick at her stomach, sweat much in the night, complained of pains, owing, it was thought, to cold contracted. The cly-

ster, the powders every six hours, and the salad oil, were repeated. The *nitre* was omitted, and the *opium* quite laid aside. She sweat much this day, and drank plentifully of water-gruel and baum tea. The clyster worked well. *Wednesday* morning, 31st, the pains were gone. She had been sick at midnight, after which she had sweat profusely; all symptoms disappeared, except her dread of water and dogs. The *opium* plaister was removed, and the powders continued every six hours, but in the evening were only ordered night and morning. On *Thursday* the symptoms returned, but abated after her drinking tea. This night she was much frightened by dreams. On *Friday* morning a clyster was given; the dread of water was now quite over, only it made her giddy. *Sunday* she mended in appetite, strength, and spirits, and continued so till the 16th of *August*, when the young woman, through the folly or wickedness of a man and woman, was thrown into the greatest terrors. An opiate was given that night, and the *cinnabar* powders were directed in *elder flower* tea. She was vomited with *ippecacuanha* wine, bled to about twelve ounces, and took saline draughts with bitter and antihysterical medicines. Doctor NUGENT judging the case to be now hysterical, directed the following powder, which Doctor HALLET, of *Exeter*, had used with great success.

R. *As. fætid.* gr. xii. *mosch.* gr. x. *camphor.*  
gr. vij. *m. f. pulvis.*

This was given in the afternoon in a bolus, and repeated at bed-time, with the saline draughts between whiles. The next day, after sweating considerably, and sleeping well, she was much mended, in all respects. Two saline draughts were ordered for the day, and the fœtid bolus at night; and on the 4th of September she was so well, as to require no more medicines, and has remained well ever since.

#### REMARKS.

This Case of ELIZABETH BRYANT plainly shews how greatly both the body and mind are affected by this terrifying accident of the bite of a mad dog. From the account, and Doctor NUGENT's very ingenious and just observations, it is evident, this young woman was bitten by a dog in whom the heat of the weather in the month of June, the situation the animal was placed in, frequently as a turnspit, and perhaps the want of water, had raised a fever, and, as is common, a *delirium* ensued; in which fit he bit ELIZABETH BRYANT: but she was not apprized of his madness, till, having offered him some minced meat, he could not swallow it, frothed much at the mouth, and slavered. His dying the next

day, without violence, and a dog being killed raving mad, three weeks after, who had eaten the meat refused and slavered on by the other ; put it out of doubt, that the acute fever, raised in the turnspit dog, had sufficiently produced, before his death, that degree of acrimony in his *saliva*, as strongly to affect not only the other dog, but ELIZABETH BRYANT also.

From the assurances given her, by a neighbour, that the dog did not die mad, but choaked by something sticking in his throat, she seems to have had no further anxiety, till about three weeks after ; when, probably, the madness of the other dog brought the accident fresh again into her mind. She then becomes of an unsettled temper, restless, and fearful of dogs and water. Mr. WRIGHT attempts the usual preventive cure, and, finding no effect from the sea-water bath, which she could bear no longer, he bled her, gave Doctor MEAD's *pulvis antilyffus*, and put her into the cold bath, which was left off on the appearance of the *menses*.

This treatment, prudent and well intended, although it might protract the effects of the latent *virus*, yet it did not prevent it from shewing itself : first, by the appearance of two pimples, with white heads, on the back of the hand ; and after, by a numbness and pain in the arm, hand, and shoulder, of the bitten arm. Upon this, the *cinnabar* and *musk* medicine being administered, she found relief from

from her pains, and her spirits were raised, for a while ; but, five hours before the full moon, the pains from the bitten parts shoot regularly up the arm to her throat, and, as these advance, the terrors of her mind increase. Doctor NUGENT, in these circumstances, orders the young woman to be blooded ; and, being chiefly of a sanguine constitution, the bleedings are repeated, during the course of the illness, till she had lost near sixty ounces of blood : and if these evacuations, together with the regular course of the *menses*, be attended to, there seems the same event to have followed, as in the person from whom Doctors HARTLEY and SANDYS drew 120 ounces \*. The *cinnabar* medicine and *opium* are then directed, to promote sweat, assuage the pains, and relax the nervous system so as to remove the spasms, and the irritation which caused them ; and also to quiet the mind, by procuring sleep.

Doctor NUGENT was so desirous of avoiding all kind of irritation, that he rejoices at his omission of the *turpeth mineral* bolus which he had prescribed ; and even declares †, as a caution to others, that he should not have directed *antimonial* clysters, on account of their irritation, had not the free use of *opium* made their stimulating quality, as he thought, necessary.

\* Philosophical Transactions, N° 448.

† NUGENT's Essay on the *hydrophobia*, p. 99, 100.

The Doctor tried to preserve his patient from too great a heat and inflammation, by the use of *nitre*, but this salt proved nauseous; and therefore he contented himself with diluting, by means of *water gruel* and *baum tea*. His directions proved successful; but the mind, like the body, remained weakened, and liable to a relapse upon the first surprise. The inadvertence or mischievous design of the persons who affrighted her, threw her into all the former terrors, and she felt, as she thought, the same pains; but a vomit seasonably given that night, to remove a loathing and sickness at the stomach; her being bled two days after, and the course of antihysteric medicines, restored that due state of the solids and fluids which constitutes health; and, no doubt, proper encouragement, and comfort, also recovered her mind to it's former clearfulness and tranquillity.

Upon the whole, ELIZABETH BRYANT's case appears to be an acute, not a putrid one; and the necessary evacuations, together with her fright, may have produced the high degree of *hysterics* which followed.

## C A S E III, IV, and V.

THE 29th *December*, 1751, Mr. JOHN MEHEW, a farmer of Godmanchester in the county of *Huntingdon*, having been absent from home a few days, returned in the evening, and was informed that his yard dog was run mad, and had bitten eight cows, most of them with calf, and two sows with pig; all which refused to eat or drink, and died mad. The cows had the *pewter medicine* given them, by way of drench, several times, but without success.

This evening, *December* the 29th, one of the cows, being thought bitten, had been loosened, they having been all tied up, soon after they were bitten. She was no sooner at liberty, than she ran furiously up and down the yard, endeavoring to do all the mischief possible, but was secured by JOHN JONES, the man servant, whom the cow bit in the fore finger, which was much torn. The same evening Mr. MEHEW going to assist in giving the same cow the drench of the *pewter medicine*, she bit him on the back of the left hand, and tore it much. The cow would not admit of the least drop of the drench, and slavered a great quantity into the bowl, in which, not knowing what had happened, Mrs. MEHEW dipped her fingers, and tasted the

the liquor, to feel if it were not too hot. Being told the cow had slavered in it, she was much terrified.

Upon being sent for, I met the late Mr. HENRY HAWKINS, surgeon and apothecary at Huntingdon, who dressed Mr. MEHEW's and JOHN JONES's wounds in the following manner. First, the wounds were cleared from the *saliva* with dry soft lint, then they were dilated, and suffered to bleed, the blood being washed off with warm milk and water, and the wounds dried, they were dressed with pledgits of lint dipped in warm *oil of turpentine*, over which, cataplasms of bread and milk, with *Venice treacle*, were applied. Mr. MEHEW, and his servant JOHN JONES, were then blooded plentifully, and at night they and Mrs. MEHEW were vomited with *vinum ipecacuanhæ* and *oxymel scilliticum*: after the operation, a cordial draught was given to each of them. The next morning they took Doctor MEAD's *pulvis antilyffus* in warm cow's milk. Mr. MEHEW's hand, and JOHN JONES's finger, were dressed with pledgits spread with *unguentum e gummi elemi*, after rubbing on the lips of the wounds, and over the back of Mr. MEHEW's hand, and JOHN JONES's finger, about one dram of the *unguentum cæruleum fortius*.

I directed them to take, each of them, two ounces of Doctor FULLER's *decoctum anti-lyffum*, in the afternoon at five o'clock. The next

next day Mr. MEHEW and JOHN JONES were dressed with the same ointments, adding only to the *unguentum e gummi elemi* some *mercurius præcipitatus ruber*, to keep the wounds open, and discharging. The *pulvis antilyffus* and *decoctum antilyffum* were continued eight days, after which, the *Chinese cinnabar* medicine was directed, with this difference, that Mrs. MEHEW took the powder with a julep made up with *pennyroyal* water, *rue* water, tincture of *castor*, and of *valerian*, and syrup of *saffron*; and Mr. MEHEW and his servant JONES took it with a spoonful of *rum* and water.

By this method no bad symptom appeared, and the wounds were permitted to heal at the month's end, the mercurial ointment having always kept them free from inflammation. I advised the use of the cold bath; but, satisfied with their cure, they did not chuse to plunge into cold water in that sharp season of the year, in the midst of frost and snow; and have never felt any bad consequence, either from their bites, or apprehensions; being all alive, and in perfect health, at this time.

#### REMARKS.

That not only the dog was mad, but also the cattle whom he bit, is evident, from their all dying furious. That Mr. MEHEW and his servant JONES received the *saliva* of the cow, with

with their wounds, I make not the least doubt of. But although I am persuaded of the efficacy of mercurial unction, and of the method pursued; yet I am not clear in my opinion, whether the *saliva* of a mad cow, bitten by a mad dog, would transmit the same vitiated *virus*, and poisonous effects, to the persons she bit: for, possibly, the particles of the mad dog's *saliva*, circulating in the blood of the cow, might have the baneful effect of producing fever, *delirium*, convulsions, *hydrophobia*, and death; and yet the acceſſent disposition of the fluids in the cow might so alter the nature of the particles of the dog's *saliva* circulating in them, that the effect of the cow's *saliva*, upon the persons she bit, was not irritating to produce the bad symptoms. And may not this be a material difference between *granivorous* and *carnivorous* animals? Be that as it may, I would not hazard my patients to this conjecture, which repeated observation can only determine.

With regard to Mrs. MEHEW, as she had no wound, nor scratch, of any kind, wherein the *saliva* of the cow could be admitted; my treatment of her was merely cautious, to prevent any ill effect from swallowing the least part of the cow's *saliva*; but chiefly to guard against the approach of hysterick and nervous disorders, which the surprize and apprehension she was thrown into might have produced. With this view, I did not chuse to have her bled.

bled with the others; but, after the vomit, and during the course of the medicines, I directed the use of *antibysteric*, nervous, and cordial compositions, to be taken with those particular ones recommended for the distemper arising from the bite of the mad dog: and I all along, and ever since have, assured her, that I did not believe she was infected by the cow's *saliva*, nor would feel the least bad effect from it.

### C A S E VI.

*The Case of FRANCIS RAY, blacksmith, of Little Swaffham, in the county of Cambridge. Communicated by CHARLES ALLIX, Esq.*

ON Tuesday the 19th of November, 1754, one RAY, a poor man, of Little Swaffham, applied to Mr. ALLIX, begging some sea water for the use of his son, 22 years of age; who, being at work with a blacksmith at Cambridge, was there bitten by a mad dog, three weeks before. The wound, between the fore-finger and thumb, being only skin deep, and not in the least painful, the young man gave no attention to it, till, at the new moon, on the 14th of November, his hand began to swell, and be painful, and continued daily increasing till the 18th, when he went home to his father's.

Mr. AL-

Mr. ALLIX, not expecting any benefit from his sea water, which was grown stale, sent the young man two doses of Doctor JAMES's fever powders, with directions to take one as soon as the sea water had done working, and the other at night. Soon after, Mr. ALLIX, recollecting he had Doctor JAMES's pamphlet, which related, in a letter to professor BOER-HAAVE, the effects of mercurials, in such cases; he set out, at two o'clock in the afternoon, for *Cambridge*, to have the medicines prepared.

In his way, Mr. ALLIX called on the young man, and looked at the wound, which was not open, but much inflamed, and round it a circular swelling. He complained of great pain in the wound, darting up the arm; had convulsive catches in his limbs, and his eyes looked very wild, and staring. He felt great anxiety in his sleep, and had been very feverish.

The sea water came partly off his stomach quite clear, the remainder purged him. Doctor JAMES's powder also vomited and purged him. It brought off a great deal of green stinking bile, after which the fever was much abated.

Between seven and eight in the evening, Mr. ALLIX called at *Little Swaffham*, on his return from *Cambridge*, when the swelling was increased, the inflammation more intense, extending itself quite up the wrist, and part

of

of his fore arm ; and complained that the pain, which grew more violent, now shot to his heart.

The part was immediately rubbed with half a dram of the mercurial ointment. The second dose of Doctor JAMES's powder having been just given, although forbidden by Mr. ALLIX ; he could not give the poor man the *turpeth mineral* bolus.

The fever powder having operated in a milder manner than the former dose, the young man fell into a breathing sweat, and quiet sleep, which held him the whole night : next morning, *Wednesday the 20th November*, Mr. ALLIX found the swelling greatly abated, and the man's looks more composed. He then took one of the following bolusses :

& *Turpeth. mineral. gr. xij. pulv. contrayeru. comp. 3j. theriac. andromach. q. s. m. f. bol. iij.*

It worked him violently, upwards and downwards : in the afternoon he took one of Doctor MEAD's powders (a dram and a half of the *pulvis antilyssus*). The wound and hand were anointed, and directions were given to repeat the rubbing in of the ointment, morning and evening.

*Thursday, 21st*, the swelling, and inflammation, were almost gone. A second *turpeth* bolus was taken, which wrought very briskly ;

and Doctor MEAD's powder was given in the afternoon.

*Friday*, the 22d, he complained, at times, of the pains returning, which alarmed him much. He took a *turpeth* bolus in the morning, and repeated the ointment both in the morning and evening, which he was directed to apply, as often as the pain and inflammation were inclined to return.

*Saturday*, 23d, the swelling and inflammation were not to be seen, his mouth began to be sore, and he spit much. Mr. ALLIX desired he would take another *turpeth* bolus that evening, and the two remaining doses of the *pulvis antilyffus* at proper intervals, lessening the quantity of the ointment to be rubbed in, by degrees. Mr. ALLIX, going out of the country for a few days, left orders with RAY's father, in case a salivation should come on, or the pain and inflammation return, to apply to Mr. JENNINGS, apothecary in *Cambridge*.

*Wednesday*, the 27th, Mr. ALLIX returned to *Swaffham*, and called on the poor man, whom he found free from complaints, only weakened by the regimen he had followed. In this gentleman's absence, the family had been alarmed at a trifling return of the pain and inflammation. Mr. JENNINGS had been sent for, and only ordered an electuary with *valerian*, in addition to what was before directed.

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The swelling and inflammation being now entirely gone, Mr. ALLIX desired the man to use the mercurial ointment very sparingly, and leave it off by degrees; and recommended, as soon as possible, the use of the cold bath. About the 10th of December, the young man, and his father, called upon Mr. ALLIX, to thank him for his charitable assistance, and to let him know that young RAY was quite well, and returning to work.

Mr. ALLIX farther observes, that, notwithstanding the visible effects of the mercurial ointment, in removing the pain and inflammation on the first application, and abating the violence of the symptoms, before even the first *turpeth* bolus was taken; they, more than once, seemed inclined to return, but were removed again by a fresh application of the ointment.

The diet was chicken, or other fresh white meat, and a glass or two of Madeira wine made into negus, to keep up his spirits.

#### REMARKS.

This Case affords evident proofs of the effects arising from the putrid *saliva* of a mad dog, in autumn; the progress is also plainly to be traced: and had not Mr. ALLIX's kind assistance been applied in the very critical moment, there is no doubt but the severest symp-

toms had soon followed, and the patient had lost his life.

It is to be observed, that the sea water, although stale, diluted the green tenacious bile, and carried part of it downwards. Doctor JAMES's powders served as vomits, which cleared the stomach from the vitiated putrid bile, and took off so much of the irritation as to permit the *turpeth* bolus to be given without increasing the inflammation. But before the first *turpeth* bolus was taken, the young man's fever and swelling had abated; he had fallen into a breathing sweat, and slept quietly the whole night, after the first mercurial unction on the *Tuesday* evening. On *Wednesday* morning the patient's looks were composed, and then he took the first *turpeth* bolus; and on *Thursday* the swelling and inflammation were almost gone before the second *turpeth* bolus was taken. On *Saturday* the young man's mouth became sore, and he spit much; notwithstanding which, Mr. ALLIX directed the third *turpeth* bolus to be given, and the remaining two doses of the *pulvis antilyffus*; so that the salivary and urinary discharges were encouraged to the utmost: but, for fear of increasing the salivation too much, the ointment was ordered to be then rubbed in sparingly.

In Mr. ALLIX's absence, Mr. JENNINGS, the apothecary, only gave the patient an electuary

electary chiefly composed of *valerian*, on account of his low and weak state after the spitting.—And on the 10th of *December*, that is, at the end of three weeks, the young man was perfectly cured.

If any farther proof be necessary, of the mercurial ointment having effected this cure; Mr. ALLIX has added a very strong testimony, by saying, that the symptoms were, more than once, inclined to return, but were as often removed by the application of the mercurial ointment.

### C A S E VII.

**I**N *March*, 1759, Mr. LEWIS ALSOP, a butcher, aged about thirty years, of a robust make, but phlegmatic constitution, had the calf of his leg much tore by the bite of a mad dog. He went down, immediately, to *Lynn* in *Norfolk*, where he bathed in the sea. His wound healed without difficulty. About the end of *March*, 1760, having opened shop at *Witton*, in the county of *Huntingdon*, he complained, to several of his customers, that the calf of his leg was very painful, particularly at the change and full of the moon, at which time he always appeared much dejected.

Being consulted, I advised him to rub all over the calf of the leg, but more particularly over the wound, a dram of the *unguentum*

*guentum cœruleum fortius*, morning and evening, during a week, and every fourth day to take a purge of *manna*, and of the *bitter purging salts*. This method having succeeded, I recommended the repetition of it three days before every new and full moon, and as long after, during three months, taking care to purge, to prevent a salivation; which injunction he carefully followed, in the months of *May, June, and July*, following. In *October* Mr. *ALSOP* came to me, ill of an intermitting fever, for which I directed a vomit, and the *Peruvian bark*, whereby it was soon cured.

In *December 1760*, he called upon me, to thank me for all my care; and told me, he had been free from pain, or any complaint in his leg, some months, and so he continued to his death, which, as I am informed by Mr. *HUNT*, his apothecary, assistant to SIR THOMAS MACKWORTH, was occasioned by a putrid fever, which he contracted from a neighbour, whom he visited in his last moments, and of which fever he also died, on the fifteenth day, *March 7, 1761*.

#### REMARKS.

From the periodical returns of the pain in the part which had been wounded, it appears, that the bathing in the sea had not carried off the *virus*; but that it remained in the blood.

blood. The cessation of the pain, after the first mercurial unctioп, shews the power that mercury has of driving the vitiated *saliva* out by some of the emunctories: and had not Mr. ALSOP been perfectly cured from the effects of the bite he received from the mad dog, it is more than probable, that, in his last illness, the symptoms, arising from the bite, would have appeared.

Upon the strictest inquiry, I do not find, that he had either the dread of water, or of dogs, or any conversation tending to express the remembrance of his former accident; but only the symptoms usually attending fevers of the kind which proved fatal to him.

## C O N C L U S I O N.

THE foregoing considerations afford the pleasing hopes, that this disease, hitherto so terrible, and aggravated by the apprehensions which attend it, may now become, like others, more certainly cured; and therefore much less dreaded than heretofore.

But, before I proceed to lay down the directions to be followed, taken from the observations I have related, it may not be amiss to inquire, Whether the general alarm, spread all over the cities of *London* and *Westminster*, and parts adjacent, in 1760, and also in several other parts of *England*, was occasioned by any real cause, which infected dogs, and produced that madness? or whether it was merely a panic which had seized the inhabitants of those places?

The winter of the year 1759 had been very mild, and open; the spring of 1760 very forward: scarce any snow, or frost, had appeared in those seasons; and, during the whole summer, myriads of insects were seen in every leaf, upon the trees; and the springs, remarkably low, were full of them; more particularly the ditches, and pools of stagnating waters, of which the cattle were frequently obliged to drink, through the scarcity of water:

and

and even the inhabitants of several villages had no other supply. Hence arose, in the autumn, especially among the poorer sort of people, putrid fevers, of such a malignant nature, as to be little inferior to pestilential distempers. Persons, in all appearance, in strength, and vigor of health, were carried off, in three, five, seven, or nine days, with the most violent marks of malignity and putrefaction. All had *petechiae*; and none escaped without critical abscesses of the *axillary*, *inguinal*, and sometimes of the *parotid* glands.

No wonder, then, that the brute creation were also liable to such illness as corrupted waters could bring on; and especially if their food was equally corrupt, which dogs are known to feed upon of choice. The offals, usually cast about the shambles in every great town; the stinking waters contained in some marshy grounds; and, perhaps, even the want of water, in many places, might cause this madness among the dogs.

It first appeared in the borough of *Southwark*; and the consternation diffused itself all over the cities of *London* and *Westminster*. The magistrates immediately issued out a very prudent and judicious order, for every person, who kept dogs, to confine them, during a month, within doors; and ordered their beadle, and other officers, to destroy all dogs found at large; with a reward of two shillings for each dog which should be killed.

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But as the wisest and most judicious intentions are frequently perverted, and the most beneficial regulations prove oppressive, through an abuse of power; so this reward prompted a licentious rabble to kill every dog they could meet, within their reach, with all the barbarity possible: and too often the number of real mad dogs was increased, by the violent pursuits and attacks of the giddy and unthinking populace. Therefore it must appear very plain, that, as there was sufficient cause, in that hot season, to produce the putrid fever, and madness, among dogs; so their number was multiplied, by the barbarous usage they met with; and even all these added, fell far short, in number, to those who were killed through wantonness, and without reason.

The fatal persuasion, that there was no cure for the disease incident to mankind from the bite of a mad dog, may have justified the consternation which was so general in the metropolis: but now, that, in many parts of the world, successful cures have shewn this malady not to be incurable, there can be no longer any plea for that extreme anxiety and fear.

There is but one general rule to be observed in the treatment of this disorder, that is, the application of the *mercurial ointment*, which can never be safely dispensed with: all other rules, of evacuations, external applications, or internal medicines, must be varied, according to the stage of the disease, the age, and con-

constitution, of the patient. However, for the direction of such who may not be at hand to have assistance, the following particulars are mentioned.

The part bitten should immediately be cleaned from the *saliva* of the mad dog, and the wounds encouraged to bleed, carefully clearing the blood away; then half a dram of the *mercurial ointment*, known by the name of *unguentum cœruleum fortius*, or the *stronger blue ointment*, should be rubbed in, and repeated night and morning, increasing or lessening the quantity, as it may prove necessary. Sanguine constitutions will require bleeding; leucophlegmatic, relaxed, and bilious ones, should be vomited, either with *ippecacuanha* wine, with or without *oxymel of squills*, which will cleanse the stomach and bowels from the putrid bile, and acrid *saliva*, that has been discharged into them; and in the advanced stage, when liquids begin to pass with difficulty, if it be requisite to empty the stomach and bowels, after plentiful bleedings, some grains of *ippecacuanha* and *white hellebore root* may be given in a bolus, made up with the *oxymel of squills*. These vomits will be less apt to irritate the *primeæ viæ*, than either *turpeth mineral*, or any *antimonial* preparation.

Doctor MEAD's *pulvis antilyffus* may then be taken every morning, in warm milk, to procure the urinary discharges, while the *mercurial frictions* are continued; and if these are inclined

inclined to salivate, an emollient clyster; or a purge, with *manna*, *cooling salts*, and *rhubarb*, may be given. *Rhubarb*, either in powder, or the syrup, will be best adapted to children. Clysters are recommended, in all stages, by Doctor DESAULT, professor BOERHAAVE, and Doctor MEAD; and are to be composed of such ingredients as the case may require, whether emollient, or coolers. After the mercurial ointment has been used four or five days, and the patient purged with some of the abovementioned medicines, or, if necessary, with *crude mercury*, divided with *turpentine*, and mixed with *rhubarb*, or by *mercurius dulcis*, well sublimed, and mixed with *rhubarb*; then it may be proper, in some cases, especially where the spasms are frequent, to give the *cinnabars*, either with or without *musk*, as perfumes agree or disagree with the patient: indeed there are instances wherein *musk* has not been disagreeable to the stomach, although the person could not usually bear the smell of it. The *cinnabar* powders are to be taken every six or eight hours, with a julep of *rue water*, *pennyroyal water*, *tinctorie of castor*, and some common syrup, or in a glass of *arrack* alone, or with water.

In tender constitutions, antispasmodic and antihysteric medicines may be used, towards the end of the cure; but nature, in this disease, no more than in any acute disorder, is not to be overcharged with medicines: for,

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as Doctor MORTON observes\*, " an officious " overloading seldom goes off unpunished." And care must be taken, lest, instead of strengthening the nerves, they suffer not by too much irritation.

Such patients as can, without fear, be prevailed upon to go into the cold bath, willingly and of themselves, may complete their cure by that immersion ; but force, or too earnest persuasion, are cautiously to be avoided.

The diet to be kept, during the mercurial frictions, which, as hath been said, are to be repeated according to the case, and intirely depended upon, is to be light and nourishing, neither high seasoned, nor acrid : in the worst stages, a moderate quantity of wine may increase the inflammation ; whereas wine may be of use in the beginning, and in a dejected state. White meats will suit the stomach best ; and milk pottage, water gruel, *polenta*, that is, a decoction of *oatbread* toasted, and *toast and water*, may be drank : as likewise an infusion of *black currants* stalks and leaves, or *baum* tea sweetned with *black currant* jelly : these two last will better suit in the inflammatory stage.

So far from confining the patients to their room, or house ; exercise, company, and diversions, are to be encouraged : for the mind

\* Natura non debet lacesti medicamentis. Quod fit officiose raro impunè patratur. RICHARDI MORTON Exercitationes.

being as much affected as the body, the cure will be much forwarded by a proper application to the passions, avoiding all conversation relating to madness, or mad dogs. Doctor DESAULT relates \* the success which attended these directions which he gave to a lady of *Bourdeaux*, who, under the course of mercurial frictions, constantly visited her friends, went to concerts, and other public places.

Thus far the cure is only preventive of the *hydropobia*, and designed for the milder progress of the disease; and also when it is complicated with *hypochondriac* or *hysterical* symptoms; but in the confirmed state, when the *hydropobia* appears, the actual cure is to be performed by copious and repeated bleedings, cooling clysters, often administered, of *barley water, nitre, honey, and vinegar*; and, after these evacuations, it may be allowable, in case of a considerable flow of the *saliva*, to apply a blister round the neck, to take off part of the discharge, as succeeded in Doctor HELE's remarkable observation: this is the only time wherein blisters can be safely applied.—But the medicine chiefly to be depended upon is the *mercurial ointment*, which is to be rubbed in three times a day, and continued till the symptoms decrease, and the discharge from the glands of the mouth

\* DESAULT *Dissertation sur la rage*, p. 311.

shew it is proper to lessen the quantity of the ointment.

When the throat and stomach will admit of liquids, the same method, above mentioned, may be pursued, towards compleatting the cure.

*F I N I S.*

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*Published by the same AUTHOR.*

I. An ESSAY on the Contagious Distemper among the Horned Cattle.

II. A DISCOURSE on the Usefulness of Inoculating the Horned Cattle. Read before the Royal Society.

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